



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: <b>PCT/US00/07044</b></p> <p>(22) International Filing Date: <b>15 March 2000 (15.03.00)</b></p> <p>(30) Priority Data:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">09/268,866</td> <td style="width: 40%;">15 March 1999 (15.03.99)</td> <td style="width: 30%;">US</td> </tr> <tr> <td>09/436,983</td> <td>9 November 1999 (09.11.99)</td> <td>US</td> </tr> <tr> <td>09/435,945</td> <td>9 November 1999 (09.11.99)</td> <td>US</td> </tr> <tr> <td>09/450,857</td> <td>29 November 1999 (29.11.99)</td> <td>US</td> </tr> <tr> <td>09/453,850</td> <td>2 December 1999 (02.12.99)</td> <td>US</td> </tr> <tr> <td>09/493,444</td> <td>28 January 2000 (28.01.00)</td> <td>US</td> </tr> </table> <p>(71) Applicant: <b>EOS BIOTECHNOLOGY, INC. [US/US]; 225A Gateway Boulevard, South San Francisco, CA 94080-7019 (US).</b></p> <p>(72) Inventors: <b>MACK, David; 2076 Monterey Avenue, Menlo Park, CA 94025 (US). GISH, Kurt, C.; 4302 23rd Street, San Francisco, CA 94114 (US). WILSON, Keith, E.; 219 Jeter Street, Redwood City, CA 94062 (US).</b></p> <p>(74) Agents: <b>BREZNER, David, J. et al.; Flehr Hohbach Test Albritton &amp; Herbert LLP, Suite 3400, 4 Embarcadero Center, San Francisco, CA 94111-4187 (US).</b></p>		09/268,866	15 March 1999 (15.03.99)	US	09/436,983	9 November 1999 (09.11.99)	US	09/435,945	9 November 1999 (09.11.99)	US	09/450,857	29 November 1999 (29.11.99)	US	09/453,850	2 December 1999 (02.12.99)	US	09/493,444	28 January 2000 (28.01.00)	US	<p>(81) Designated States: <b>AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</b></p> <p><b>Published</b> <i>Without international search report and to be republished upon receipt of that report.</i></p>
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<p>(54) Title: <b>NOVEL METHODS OF DIAGNOSING COLORECTAL CANCER, COMPOSITIONS, AND METHODS OF SCREENING FOR COLORECTAL CANCER MODULATORS</b></p>																				

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## NOVEL METHODS OF DIAGNOSING COLORECTAL CANCER, COMPOSITIONS, AND METHODS OF SCREENING FOR COLORECTAL CANCER MODULATORS

### FIELD OF THE INVENTION

5 The invention relates to the identification of expression profiles and the nucleic acids involved in colorectal cancer, and to the use of such expression profiles and nucleic acids in diagnosis and prognosis of colorectal cancer. The invention further relates to methods for identifying and using candidate agents and/or targets which modulate colorectal cancer.

### BACKGROUND OF THE INVENTION

10 Colorectal cancer is a significant cancer in Western populations. It develops as the result of a pathologic transformation of normal colon epithelium to an invasive cancer. There have been a number of recently characterized genetic alterations that have been implicated in colorectal cancer, including mutations in two classes of genes, tumor-suppressor genes and proto-oncogenes, with recent work suggesting that mutations in DNA repair genes may also be involved in tumorigenesis. For example, inactivating mutations of both alleles of the adenomatous polyposis coli (APC) gene, a  
15 tumor suppressor gene, appears to be one of the earliest events in colorectal cancer, and may even be the initiating event. Other genes implicated in colorectal cancer include the MCC gene, the p53 gene, the DCC (deleted in colorectal carcinoma) gene and other chromosome 18q genes, and genes in the TGF- $\beta$  signaling pathway. For a review, see Molecular Biology of Colorectal Cancer, pp238-299, in Curr. Probl. Cancer, Sept/Oct 1997.

20 Imaging of colorectal cancer for diagnosis has been problematic and limited. In addition, dissemination of tumor cells (metastases) to locoregional lymph nodes is an important prognostic factor; five year survival rates drop from 80 percent in patients with no lymph node metastases to 45 to 50 percent in those patients who do have lymph node metastases. A recent report showed that micrometastases  
25 can be detected from lymph nodes using reverse transcriptase-PCR methods based on the presence of mRNA for carcinoembryonic antigen, which has previously been shown to be present in the vast

majority of colorectal cancers but not in normal tissues. Liefers et al., New England J. of Med. 339(4):223 (1998).

Thus, methods that can be used for diagnosis and prognosis of colorectal cancer would be desirable. Accordingly, provided herein are methods that can be used in diagnosis and prognosis of colorectal cancer. Further provided are methods that can be used to screen candidate bioactive agents for the ability to modulate colorectal cancer. Additionally, provided herein are molecular targets for therapeutic intervention in colorectal and other cancers.

#### SUMMARY OF THE INVENTION

The present invention provides methods for screening for compositions which modulate colorectal cancer. Also provided herein are methods of inhibiting proliferation of cell, preferably a colorectal cancer cell. Methods of treatment of cancer, as well as compositions, are also provided herein.

In one aspect, a method of screening drug candidates comprises providing a cell that expresses an expression profile gene or fragments thereof. Preferred embodiments of the expression profile gene are genes which are differentially expressed in cancer cells, preferably colorectal cancer cells, compared to other cells. Preferred embodiments of expression profile genes used in the methods herein include but are not limited to the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7, CQA2, CGA8, CAA7 and CAA9; fragments of the proteins of this group are also preferred. It is understood that molecules for use in the present invention may be from any figure or any subset of listed molecules. Therefore, for example, any one or more of the genes listed above can be used in the methods herein. In another embodiment, a nucleic acid is selected from Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14. Preferred nucleic acids are in Figure 12, more preferably Figure 13, and most preferably in Figure 14. The method further includes adding a drug candidate to the cell and determining the effect of the drug candidate on the expression of the expression profile gene.

In one embodiment, the method of screening drug candidates includes comparing the level of expression in the absence of the drug candidate to the level of expression in the presence of the drug candidate, wherein the concentration of the drug candidate can vary when present, and wherein the comparison can occur after addition or removal of the drug candidate. In a preferred embodiment, the cell expresses at least two expression profile genes. The profile genes may show an increase or decrease.



Also provided herein is a method of screening for a bioactive agent capable of binding to a colorectal cancer modulator protein (CCMP), the method comprising combining the CCMP and a candidate bioactive agent, and determining the binding of the candidate agent to the CCMP. Preferably the CCMP is a protein or fragment thereof selected from the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7, CQA2, CGA8, CAA7 and CAA9. In another embodiment, the protein is encoded by a nucleic acid selected from Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14. Preferred nucleic acids are in Figure 12, more preferably Figure 13, and most preferably in Figure 14.

Further provided herein is a method for screening for a bioactive agent capable of modulating the activity of a CCMP. In one embodiment, the method comprises combining the CCMP and a candidate bioactive agent, and determining the effect of the candidate agent on the bioactivity of the CCMP. Preferably the CCMP is a protein or fragment thereof selected from the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7, CQA2, CGA8, CAA7 and CAA9. In another embodiment, the protein is encoded by a nucleic acid selected from Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14. Preferred nucleic acids are in Figure 12, more preferably Figure 13, and most preferably in Figure 14.

Also provided is a method of evaluating the effect of a candidate colorectal cancer drug comprising administering the drug to a transgenic animal expressing or over-expressing the CCMP, or an animal lacking the CCMP, for example as a result of a gene knockout.

Additionally, provided herein is a method of evaluating the effect of a candidate colorectal cancer drug comprising administering the drug to a patient and removing a cell sample from the patient. The expression profile of the cell is then determined. This method may further comprise comparing the expression profile to an expression profile of a healthy individual.

Moreover, provided herein is a biochip comprising a nucleic acid segment which encodes a colorectal cancer protein, preferably selected from the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7, CQA2, CGA8, CAA7 and CAA9, or a fragment thereof, wherein the biochip comprises fewer than 1000 nucleic acid probes. Preferably at least two nucleic acid segments are included. In another embodiment, the nucleic acid selected from Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14. Preferred nucleic acids are in Figure 12, more preferably Figure 13, and most preferably in Figure 14.

Furthermore, a method of diagnosing a disorder associated with colorectal cancer is provided. The method comprises determining the expression of a gene which encodes a colorectal cancer protein preferably selected from the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7, CQA2, CGA8, CAA7 and CAA9 or a fragment thereof in a first tissue type of a first individual, and comparing the distribution to the expression of the gene from a second normal tissue type from the first individual or a second unaffected individual. In another embodiment, the protein is encoded by a nucleic acid selected from Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14. Preferred nucleic acids are in Figure 12, more preferably Figure 13, and most preferably in Figure 14. A difference in the expression indicates that the first individual has a disorder associated with colorectal cancer.

In another aspect, the present invention provides an antibody which specifically binds to a colorectal cancer protein, preferably selected from the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7, CQA2, CGA8, CAA7 and CAA9, or a fragment thereof. In another embodiment, the protein is encoded by a nucleic acid selected from Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14. Preferred nucleic acids are in Figure 12, more preferably Figure 13, and most preferably in Figure 14. In a preferred embodiment, the fragment of CAA9 is selected from CAA9p1, CAA9p2, CAA9p3, CAA9p4, CAA9p4MAPS, CAA9p5 and CAA9p5MAPS. Other preferred fragments for the breast cancer proteins are shown in the figures. Preferably the antibody is a monoclonal antibody. The antibody can be a fragment of an antibody such as a single stranded antibody as further described herein, or can be conjugated to another molecule. In one embodiment, the antibody is a humanized antibody.

In one embodiment a method for screening for a bioactive agent capable of interfering with the binding of a colorectal cancer protein (CCMP) or a fragment thereof and an antibody which binds to said CCMP or fragment thereof. In a preferred embodiment, the method comprises combining a CCMP or fragment thereof, a candidate bioactive agent and an antibody which binds to said CCMP or fragment thereof. The method further includes determining the binding of said CCMP or fragment thereof and said antibody. Wherein there is a change in binding, an agent is identified as an interfering agent. The interfering agent can be an agonist or an antagonist. Preferably, the antibody as well as the agent inhibits colorectal cancer.

In a further aspect, a method for inhibiting colorectal cancer is provided. In one embodiment, the method comprises administering to a cell a composition comprising an antibody to a colorectal modulating protein, preferably selected from the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7, CQA2, CGA8, CAA7 and CAA9, or a fragment

thereof. In another embodiment, the protein is encoded by a nucleic acid selected from Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14. Preferred nucleic acids are in Figure 12, more preferably Figure 13, and most preferably in Figure 14. The method can be performed in vitro or in vivo, preferably in vivo to an individual. In a preferred embodiment the method of inhibiting colorectal cancer is provided to an individual with cancer. As described herein, methods of inhibiting colorectal cancer can be performed by administering an inhibitor of colorectal cancer protein activity, including antisense molecules, and preferably small molecules.

Also provided herein are methods eliciting an immune response in an individual. In one embodiment a method provided herein comprises administering to an individual a composition comprising a colorectal modulating protein, preferably selected from the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7, CQA2, CGA8, CAA7 and CAA9, or a fragment thereof. In another embodiment, the protein is encoded by a nucleic acid selected from Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14. Preferred nucleic acids are in Figure 12, more preferably Figure 13, and most preferably in Figure 14. In another aspect, said composition comprises a nucleic acid comprising a sequence encoding a colorectal cancer modulating protein, preferably selected from the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7, CQA2, CGA8, CAA7 and CAA9, or a fragment thereof. In another embodiment, the nucleic acid is selected from Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14. Preferred nucleic acids are in Figure 12, more preferably Figure 13, and most preferably in Figure 14.

Further provided herein are compositions capable of eliciting an immune response in an individual. In one embodiment, a composition provided herein comprises a colorectal cancer modulating protein, preferably selected from the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7, CQA2, CGA8, CAA7 and CAA9, or a fragment thereof, and a pharmaceutically acceptable carrier. In another embodiment, the protein is encoded by a nucleic acid selected from Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14. Preferred nucleic acids are in Figure 12, more preferably Figure 13, and most preferably in Figure 14. In another embodiment, said composition comprises a nucleic acid comprising a sequence encoding a colorectal cancer modulating protein, preferably selected from the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7, CQA2, CGA8, CAA7 and CAA9, or a fragment thereof, and a pharmaceutically acceptable carrier. In another embodiment, the nucleic acid is selected from Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14. Preferred nucleic acids are in Figure 12, more preferably Figure 13, and most preferably in Figure 14.

A method of neutralizing the effect of a colorectal cancer protein, preferably selected from the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7, CQA2, CGA8, CAA7 and CAA9, or a fragment thereof, comprising contacting an agent specific for said protein with said protein in an amount sufficient to effect neutralization. In another embodiment, the protein is encoded by a nucleic acid selected from Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14. Preferred nucleic acids are in Figure 12, more preferably Figure 13, and most preferably in Figure 14.

In another aspect of the invention, a method of treating an individual for colorectal cancer is provided. In one embodiment, the method comprises administering to said individual an inhibitor of CJA8. In another embodiment, the method comprises administering to a patient having colorectal cancer an antibody to CJA8 conjugated to a therapeutic moiety. Such a therapeutic moiety can be a cytotoxic agent or a radioisotope.

Also provided herein is a method for determining the prognosis of an individual with colorectal cancer comprising determining the level of CJA8 in a sample, wherein a high level of CJA8 indicates a poor prognosis.

Novel sequences are also provided herein. Other aspects of the invention will become apparent to the skilled artisan by the following description of the invention.

#### DETAILED DESCRIPTION OF THE FIGURES

Figure 1 provides the Accession numbers for genes, including expression sequence tags, (incorporated in their entirety here and throughout the application where Accession numbers are provided), upregulated in tumor tissue compared to normal colon tissue.

Figure 2 provides the Accession numbers for genes, including expression sequence tags, upregulated in tumor tissue compared to normal colon tissue.

Figure 3 provides the Accession numbers for genes, including expression sequence tags, upregulated in tumor tissue compared to normal colon tissue.

Figure 4 provides the Accession numbers for genes, including expression sequence tags, upregulated in tumor tissue compared to normal colon tissue.

Figure 5 provides the Accession numbers for genes, including expression sequence tags, downregulated in tumor tissue compared to normal colon tissue.

Figure 6 provides the Accession numbers for genes, including expression sequence tags, downregulated in tumor tissue compared to normal colon tissue.

- 5 Figure 7 provides the Accession numbers for genes, including expression sequence tags, downregulated in tumor tissue compared to normal colon tissue.

Figure 8 provides the Accession numbers for genes, including expression sequence tags, upregulated in tumor tissue compared to normal colon tissue. Open reading frames in the sequences have been characterized as having a signal sequence (SS), a transmembrane domain (TM) or other.

- 10 Figure 9 provides the Accession numbers for genes, including expression sequence tags, upregulated in tumor tissue compared to normal colon tissue. Open reading frames in the sequences have been characterized as having a signal sequence (SS), a transmembrane domain (TM) or other.

- 15 Figure 10 provides the Accession numbers for genes, including expression sequence tags, upregulated in tumor tissue compared to normal colon tissue. Open reading frames have been characterized as having a signal sequence (SS), a transmembrane domain (TM) or other.

Figure 11 provides the Accession numbers for genes, including expression sequence tags, upregulated in tumor tissue compared to normal colon tissue. Open reading frames have been characterized as having a signal sequence (SS), a transmembrane domain (TM) or other.

- 20 Figure 12 provides the Accession numbers for genes, including expression sequence tags, upregulated in tumor tissue compared to normal colon tissue. Open reading frames have been characterized as having a signal sequence (SS), a transmembrane domain (TM) or other.

Figure 13 provides the Accession numbers for genes or fragments thereof, including descriptions of the gene or encoded protein, upregulated in tumor tissue compared to normal colon tissue.

- 25 Figure 14 provides a list of proteins, including Accession numbers for nucleic acid sequences associated with the encoding genes thereof, upregulated in tumor tissue compared to normal colon tissue.

Figure 15 shows an embodiment of a nucleic acid which includes a sequence which encodes a colorectal protein provided herein, CAA2. The start and stop codon are shaded. The sequence within the two cross marks indicates a preferred novel fragment of CAA2 provided herein, referred to herein as the "CAA2 5' end". Preferred embodiments of CAA2 include at least a portion of the CAA2 5'. The sequence in bold and indicated with a bar at the bottom right beginning with "GGC" and ending with "AAA" can be found in Accession no. AA505133.

Figure 16 shows an embodiment of a nucleic acid encoding CAA2, wherein the start and stop codons are shaded.

Figure 17 shows an embodiment of an amino acid sequence of CAA2. Preferred fragments include at least about 10 amino acids in the N-terminal end. The N-terminus as defined herein includes an embodiment beginning at the first amino acid until about any one of the three amino acids marked with a dot above them. In another embodiment, the N-terminus of CAA2 is defined as the amino acid sequence encoded by the CAA2 5' end.

Figure 18 shows the amino acid sequence of CAA2p1, a preferred CAA2 fragment provided herein.

Figure 19 shows the amino acid sequence of CAA2p2, a preferred CAA2 fragment provided herein.

Figure 20 shows an alignment of the human and mouse CAA2 polypeptides provided herein. The mouse polypeptide contains at least some of the sequence of each of the following Accession numbers: AA386837; AI508773; AA505293; and AA636546.

Figure 21 shows the relative amount of expression of CAA2 in various samples of colon cancer tissue (dark bars) and many normal tissue types (light bars).

Figure 22 shows an embodiment of a colorectal cancer nucleic acid, CAA9 mRNA. The start and stop codons are underlined.

Figure 23 shows the open reading frame of the CAA9 gene wherein the start and stop codons are underlined.

Figure 24 shows an embodiment of the amino acid sequence of a colorectal cancer protein, CAA9, wherein putative transmembrane sequences are underlined. In one embodiment, CAA9 or fragments

of CAA9 are soluble, therefore, the transmembrane domains are deleted, inactivated, and/or the peptide is truncated (with or without re-ligation) to form soluble CAA9.

Figure 25 shows embodiments of colorectal cancer proteins (also termed colorectal cancer modulator proteins). Specifically, Figure 25 shows CAA9p1, CAA9p2, CAA9p3, CAA9p4, CAA9p4MAPS, CAA9p5 and CAA9p5MAPS and their respective solubilities.

Figure 26 shows the relative amount of CAA9 expression in several different samples of colon cancer tissue (dark bars) and normal tissues (light bars).

Figure 27 shows the nucleic acid sequence for the gene encoding CGA7. Start (ATG) and stop (TAG) codons are indicated by shaded boxes. In bold is the sequence of Accession No. AA331393. Underlined is the consensus sequence derived from the compilation and alignment of published est sequences.

Figures 28A and 28B show the alignment summary and descriptions, respectively, of the various est's (by accession number) compiled to generate the consensus sequence of figure 1.

Figure 29 shows the amino acid sequence of CGA7.

Figures 30A and 30B show the relative expression of CGA7 in normal tissue and colon cancer tissue, respectively.

Figure 31 shows the nucleic acid sequence for the mRNA encoding CGA8. Start (ATG) and stop (TAG) codons are indicated by shaded boxes. In bold is the sequence of Accession No. AA2786503. Underlined is the consensus sequence derived from the compilation and alignment of published est sequences.

Figures 32A and 32B show the alignment summary and descriptions, respectively, of the various est's (by accession number) compiled to generate the consensus sequence of figure 1.

Figure 33 shows the amino acid sequence of CGA8.

Figure 34 shows the relative expression of CGA8 in breast cancer tissue, colon cancer tissue, normal tissue and fetal tissue.

Figure 35 shows the sequence for the mRNA encoding CJA8. Start (ATG) and stop (TAA) codons are indicated by shaded boxes.

Figure 36 shows the amino acid sequence for CJA8. A putative transmembrane region is designated by shading. A mouse homolog of this human protein is found at Accession Number AAF21308.1.

- 5 Figure 37 shows the relative amount of expression of CJA8 in several different samples of colon tissues (dark bars) and normal tissues (light bars).

Figure 38 shows the relative amount of expression of BCN7 in several different samples of colon tissues (dark bars) and normal tissues (light bars), as determined using the sequence of Accession Number N22107 as a probe.

- 10 Figure 39 shows an embodiment of a nucleic acid which includes a sequence which encodes a colorectal cancer protein provided herein, BCN7.

Figure 40 shows the sequence for the mRNA encoding CZA8. Start (ATG) and stop (TGA) codons are indicated by underlining.

- 15 Figure 41 shows the sequence for the mRNA encoding BCX2. Start (ATG) and stop (TGA) codons are indicated by underlining.

Figure 42 shows the sequence for the mRNA encoding CBC2. Start (ATG) and stop (TAA) codons are indicated by underlining.

Figure 43 shows the sequence for the mRNA encoding CBC1. Start (ATG) and stop (TGA) codons are indicated by underlining.

- 20 Figure 44 shows the sequence for the mRNA encoding CBC3. Start (ATG) and stop (TGA) codons are indicated by underlining.

Figure 45 shows the sequence for the mRNA encoding BCN5. Start (ATG) and stop (TAA) codons are indicated by underlining.

- 25 Figure 46 shows an embodiment of a nucleic acid which includes a sequence which encodes a colorectal cancer protein provided herein, CJA9.



Figure 47 shows an embodiment of a nucleic acid which includes a sequence which encodes a colorectal cancer protein provided herein, CQA1.

Figure 48 shows an embodiment of a nucleic acid which includes a sequence which encodes a colorectal cancer protein provided herein, CQA2.

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## DETAILED DESCRIPTION OF THE INVENTION

The present invention provides novel methods for diagnosis and prognosis evaluation for colorectal cancer (CRC), as well as methods for screening for compositions which modulate CRC. In one aspect, the expression levels of genes are determined in different patient samples for which either diagnosis or prognosis information is desired, to provide expression profiles. An expression profile of a particular sample is essentially a "fingerprint" of the state of the sample; while two states may have any particular gene similarly expressed, the evaluation of a number of genes simultaneously allows the generation of a gene expression profile that is unique to the state of the cell. That is, normal tissue may be distinguished from CRC tissue, and within CRC tissue, different prognosis states (good or poor long term survival prospects, for example) may be determined. By comparing expression profiles of colon tissue in known different states, information regarding which genes are important (including both up- and down-regulation of genes) in each of these states is obtained. The identification of sequences that are differentially expressed in CRC versus normal colon tissue, as well as differential expression resulting in different prognostic outcomes, allows the use of this information in a number of ways. For example, the evaluation of a particular treatment regime may be evaluated: does a chemotherapeutic drug act to improve the long-term prognosis in a particular patient. Similarly, diagnosis may be done or confirmed by comparing patient samples with the known expression profiles. Furthermore, these gene expression profiles (or individual genes) allow screening of drug candidates with an eye to mimicking or altering a particular expression profile; for example, screening can be done for drugs that suppress the CRC expression profile or convert a poor prognosis profile to a better prognosis profile. This may be done by making biochips comprising sets of the important CRC genes, which can then be used in these screens. These methods can also be done on the protein basis; that is, protein expression levels of the CRC proteins can be evaluated for diagnostic and prognostic purposes or to screen candidate agents. In addition, the CRC nucleic acid sequences can be administered for gene therapy purposes, including the administration of antisense nucleic acids, or the CRC proteins (including antibodies and other modulators thereof) administered as therapeutic drugs.

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Thus the present invention provides nucleic acid and protein sequences that are differentially expressed in colorectal cancer, CRC, herein termed "CRC sequences". As outlined below, CRC sequences include those that are up-regulated (i.e. expressed at a higher level) in CRC, as well as those that are down-regulated (i.e. expressed at a lower level) in CRC. In a preferred embodiment, the CRC sequences are from humans; however, as will be appreciated by those in the art, CRC sequences from other organisms may be useful in animal models of disease and drug evaluation; thus, other CRC sequences are provided, from vertebrates, including mammals, including rodents (rats, mice, hamsters, guinea pigs, etc.), primates, farm animals (including sheep, goats, pigs, cows, horses, etc). CRC sequences from other organisms may be obtained using the techniques outlined below.

CRC sequences can include both nucleic acid and amino acid sequences. In a preferred embodiment, the CRC sequences are recombinant nucleic acids. By the term "recombinant nucleic acid" herein is meant nucleic acid, originally formed in vitro, in general, by the manipulation of nucleic acid by polymerases and endonucleases, in a form not normally found in nature. Thus an isolated nucleic acid, in a linear form, or an expression vector formed in vitro by ligating DNA molecules that are not normally joined, are both considered recombinant for the purposes of this invention. It is understood that once a recombinant nucleic acid is made and reintroduced into a host cell or organism, it will replicate non-recombinantly, i.e. using the in vivo cellular machinery of the host cell rather than in vitro manipulations; however, such nucleic acids, once produced recombinantly, although subsequently replicated non-recombinantly, are still considered recombinant for the purposes of the invention.

Similarly, a "recombinant protein" is a protein made using recombinant techniques, i.e. through the expression of a recombinant nucleic acid as depicted above. A recombinant protein is distinguished from naturally occurring protein by at least one or more characteristics. For example, the protein may be isolated or purified away from some or all of the proteins and compounds with which it is normally associated in its wild type host, and thus may be substantially pure. For example, an isolated protein is unaccompanied by at least some of the material with which it is normally associated in its natural state, preferably constituting at least about 0.5%, more preferably at least about 5% by weight of the total protein in a given sample. A substantially pure protein comprises at least about 75% by weight of the total protein, with at least about 80% being preferred, and at least about 90% being particularly preferred. The definition includes the production of a CRC protein from one organism in a different organism or host cell. Alternatively, the protein may be made at a significantly higher concentration than is normally seen, through the use of an inducible promoter or high expression promoter, such that the protein is made at increased concentration levels. Alternatively, the protein may be in a form

not normally found in nature, as in the addition of an epitope tag or amino acid substitutions, insertions and deletions, as discussed below.

In a preferred embodiment, the CRC sequences are nucleic acids. As will be appreciated by those in the art and is more fully outlined below, CRC sequences are useful in a variety of applications, including diagnostic applications, which will detect naturally occurring nucleic acids, as well as screening applications; for example, biochips comprising nucleic acid probes to the CRC sequences can be generated. In the broadest sense, then, by "nucleic acid" or "oligonucleotide" or grammatical equivalents herein means at least two nucleotides covalently linked together. A nucleic acid of the present invention will generally contain phosphodiester bonds, although in some cases, as outlined below, nucleic acid analogs are included that may have alternate backbones, comprising, for example, phosphoramidate (Beaucage et al., *Tetrahedron* 49(10):1925 (1993) and references therein; Letsinger, *J. Org. Chem.* 35:3800 (1970); Sprinzl et al., *Eur. J. Biochem.* 81:579 (1977); Letsinger et al., *Nucl. Acids Res.* 14:3487 (1986); Sawai et al., *Chem. Lett.* 805 (1984), Letsinger et al., *J. Am. Chem. Soc.* 110:4470 (1988); and Pauwels et al., *Chemica Scripta* 26:141 (1986)), phosphorothioate (Mag et al., *Nucleic Acids Res.* 19:1437 (1991); and U.S. Patent No. 5,644,048), phosphorodithioate (Briu et al., *J. Am. Chem. Soc.* 111:2321 (1989), O-methylphosphoroamidite linkages (see Eckstein, *Oligonucleotides and Analogues: A Practical Approach*, Oxford University Press), and peptide nucleic acid backbones and linkages (see Egholm, *J. Am. Chem. Soc.* 114:1895 (1992); Meier et al., *Chem. Int. Ed. Engl.* 31:1008 (1992); Nielsen, *Nature*, 365:566 (1993); Carlsson et al., *Nature* 380:207 (1996), all of which are incorporated by reference). Other analog nucleic acids include those with positive backbones (Denpcy et al., *Proc. Natl. Acad. Sci. USA* 92:6097 (1995); non-ionic backbones (U.S. Patent Nos. 5,386,023, 5,637,684, 5,602,240, 5,216,141 and 4,469,863; Kiedrowshi et al., *Angew. Chem. Intl. Ed. English* 30:423 (1991); Letsinger et al., *J. Am. Chem. Soc.* 110:4470 (1988); Letsinger et al., *Nucleoside & Nucleotide* 13:1597 (1994); Chapters 2 and 3, ASC Symposium Series 580, "Carbohydrate Modifications in Antisense Research", Ed. Y.S. Sanghui and P. Dan Cook; Mesmaeker et al., *Bioorganic & Medicinal Chem. Lett.* 4:395 (1994); Jeffs et al., *J. Biomolecular NMR* 34:17 (1994); *Tetrahedron Lett.* 37:743 (1996)) and non-ribose backbones, including those described in U.S. Patent Nos. 5,235,033 and 5,034,506, and Chapters 6 and 7, ASC Symposium Series 580, "Carbohydrate Modifications in Antisense Research", Ed. Y.S. Sanghui and P. Dan Cook. Nucleic acids containing one or more carbocyclic sugars are also included within one definition of nucleic acids (see Jenkins et al., *Chem. Soc. Rev.* (1995) pp169-176). Several nucleic acid analogs are described in Rawls, *C & E News* June 2, 1997 page 35. All of these references are hereby expressly incorporated by reference. These modifications of the ribose-phosphate backbone may be done for a variety of reasons, for example to increase the stability and half-life of such molecules in physiological environments or as probes on a biochip.

As will be appreciated by those in the art, all of these nucleic acid analogs may find use in the present invention. In addition, mixtures of naturally occurring nucleic acids and analogs can be made; alternatively, mixtures of different nucleic acid analogs, and mixtures of naturally occurring nucleic acids and analogs may be made.

5 Particularly preferred are peptide nucleic acids (PNA) which includes peptide nucleic acid analogs. These backbones are substantially non-ionic under neutral conditions, in contrast to the highly charged phosphodiester backbone of naturally occurring nucleic acids. This results in two advantages. First, the PNA backbone exhibits improved hybridization kinetics. PNAs have larger changes in the melting temperature ( $T_m$ ) for mismatched versus perfectly matched basepairs. DNA  
10 and RNA typically exhibit a 2-4°C drop in  $T_m$  for an internal mismatch. With the non-ionic PNA backbone, the drop is closer to 7-9°C. Similarly, due to their non-ionic nature, hybridization of the bases attached to these backbones is relatively insensitive to salt concentration. In addition, PNAs are not degraded by cellular enzymes, and thus can be more stable.

15 The nucleic acids may be single stranded or double stranded, as specified, or contain portions of both double stranded or single stranded sequence. As will be appreciated by those in the art, the depiction of a single strand ("Watson") also defines the sequence of the other strand ("Crick"); thus the sequences described herein also includes the complement of the sequence. The nucleic acid may be DNA, both genomic and cDNA, RNA or a hybrid, where the nucleic acid contains any combination of deoxyribo- and ribo-nucleotides, and any combination of bases, including uracil, adenine, thymine,  
20 cytosine, guanine, inosine, xanthine hypoxanthine, isocytosine, isoguanine, etc. As used herein, the term "nucleoside" includes nucleotides and nucleoside and nucleotide analogs, and modified nucleosides such as amino modified nucleosides. In addition, "nucleoside" includes non-naturally occurring analog structures. Thus for example the individual units of a peptide nucleic acid, each containing a base, are referred to herein as a nucleoside.

25 A CRC sequence can be initially identified by substantial nucleic acid and/or amino acid sequence homology to the CRC sequences outlined herein. Such homology can be based upon the overall nucleic acid or amino acid sequence, and is generally determined as outlined below, using either homology programs or hybridization conditions.

30 The CRC sequences of the invention can be identified as follows. Samples of normal and tumor tissue are applied to biochips comprising nucleic acid probes. The samples are first microdissected, if applicable, and treated as is known in the art for the preparation of mRNA. Suitable biochips are

commercially available, for example from Affymetrix. Gene expression profiles as described herein are generated, and the data analyzed.

In a preferred embodiment, the genes showing changes in expression as between normal and disease states are compared to genes expressed in other normal tissues, including, but not limited to lung, heart, brain, liver, breast, kidney, muscle, prostate, small intestine, large intestine, spleen, bone, and placenta. In a preferred embodiment, those genes identified during the CRC screen that are expressed in any significant amount in other tissues are removed from the profile, although in some embodiments, this is not necessary. That is, when screening for drugs, it is preferable that the target be disease specific, to minimize possible side effects.

In a preferred embodiment, CRC sequences are those that are up-regulated in CRC; that is, the expression of these genes is higher in colorectal carcinoma as compared to normal colon tissue. "Up-regulation" as used herein means at least about a two-fold change, preferably at least about a three fold change, with at least about five-fold or higher being preferred. All accession numbers herein are for the GenBank sequence database and the sequences of the accession numbers are hereby expressly incorporated by reference. GenBank is known in the art, see, e.g., Benson, DA, et al., Nucleic Acids Research 26:1-7 (1998) and <http://www.ncbi.nlm.nih.gov/>. In addition, these genes were found to be expressed in a limited amount or not at all in heart, brain, lung, liver, breast, kidney, prostate, small intestine and spleen.

In a preferred embodiment, CRC sequences are those that are down-regulated in CRC; that is, the expression of these genes is lower in colorectal carcinoma as compared to normal colon tissue. "Down-regulation" as used herein means at least about a two-fold change, preferably at least about a three fold change, with at least about five-fold or higher being preferred.

CRC proteins of the present invention may be classified as secreted proteins, transmembrane proteins or intracellular proteins. In a preferred embodiment the CRC protein is an intracellular protein. Intracellular proteins may be found in the cytoplasm and/or in the nucleus. Intracellular proteins are involved in all aspects of cellular function and replication (including, for example, signaling pathways); aberrant expression of such proteins results in unregulated or dysregulated cellular processes. For example, many intracellular proteins have enzymatic activity such as protein kinase activity, protein phosphatase activity, protease activity, nucleotide cyclase activity, polymerase activity and the like. Intracellular proteins also serve as docking proteins that are involved in organizing complexes of proteins, or targeting proteins to various subcellular localizations, and are involved in maintaining the structural integrity of organelles.

An increasingly appreciated concept in characterizing intracellular proteins is the presence in the proteins of one or more motifs for which defined functions have been attributed. In addition to the highly conserved sequences found in the enzymatic domain of proteins, highly conserved sequences have been identified in proteins that are involved in protein-protein interaction. For example, Src-homology-2 (SH2) domains bind tyrosine-phosphorylated targets in a sequence dependent manner. PTB domains, which are distinct from SH2 domains, also bind tyrosine phosphorylated targets. SH3 domains bind to proline-rich targets. In addition, PH domains, tetratricopeptide repeats and WD domains to name only a few, have been shown to mediate protein-protein interactions. Some of these may also be involved in binding to phospholipids or other second messengers. As will be appreciated by one of ordinary skill in the art, these motifs can be identified on the basis of primary sequence; thus, an analysis of the sequence of proteins may provide insight into both the enzymatic potential of the molecule and/or molecules with which the protein may associate.

In a preferred embodiment, the CRC sequences are transmembrane proteins. Transmembrane proteins are molecules that span the phospholipid bilayer of a cell. They may have an intracellular domain, an extracellular domain, or both. The intracellular domains of such proteins may have a number of functions including those already described for intracellular proteins. For example, the intracellular domain may have enzymatic activity and/or may serve as a binding site for additional proteins. Frequently the intracellular domain of transmembrane proteins serves both roles. For example certain receptor tyrosine kinases have both protein kinase activity and SH2 domains. In addition, autophosphorylation of tyrosines on the receptor molecule itself, creates binding sites for additional SH2 domain containing proteins.

Transmembrane proteins may contain from one to many transmembrane domains. For example, receptor tyrosine kinases, certain cytokine receptors, receptor guanylyl cyclases and receptor serine/threonine protein kinases contain a single transmembrane domain. However, various other proteins including channels and adenylyl cyclases contain numerous transmembrane domains. Many important cell surface receptors are classified as "seven transmembrane domain" proteins, as they contain 7 membrane spanning regions. Important transmembrane protein receptors include, but are not limited to insulin receptor, insulin-like growth factor receptor, human growth hormone receptor, glucose transporters, transferrin receptor, epidermal growth factor receptor, low density lipoprotein receptor, epidermal growth factor receptor, leptin receptor, interleukin receptors, e.g. IL-1 receptor, IL-2 receptor, etc.

Characteristics of transmembrane domains include approximately 20 consecutive hydrophobic amino acids that may be followed by charged amino acids. Therefore, upon analysis of the amino acid

sequence of a particular protein, the localization and number of transmembrane domains within the protein may be predicted.

The extracellular domains of transmembrane proteins are diverse; however, conserved motifs are found repeatedly among various extracellular domains. Conserved structure and/or functions have been ascribed to different extracellular motifs. For example, cytokine receptors are characterized by a cluster of cysteines and a WSXWS (W= tryptophan, S= serine, X=any amino acid) motif. Immunoglobulin-like domains are highly conserved. Mucin-like domains may be involved in cell adhesion and leucine-rich repeats participate in protein-protein interactions.

Many extracellular domains are involved in binding to other molecules. In one aspect, extracellular domains are receptors. Factors that bind the receptor domain include circulating ligands, which may be peptides, proteins, or small molecules such as adenosine and the like. For example, growth factors such as EGF, FGF and PDGF are circulating growth factors that bind to their cognate receptors to initiate a variety of cellular responses. Other factors include cytokines, mitogenic factors, neurotrophic factors and the like. Extracellular domains also bind to cell-associated molecules. In this respect, they mediate cell-cell interactions. Cell-associated ligands can be tethered to the cell for example via a glycosylphosphatidylinositol (GPI) anchor, or may themselves be transmembrane proteins. Extracellular domains also associate with the extracellular matrix and contribute to the maintenance of the cell structure.

CRC proteins that are transmembrane are particularly preferred in the present invention as they are good targets for immunotherapeutics, as are described herein. In addition, as outlined below, transmembrane proteins can be also useful in imaging modalities.

It will also be appreciated by those in the art that a transmembrane protein can be made soluble by removing transmembrane sequences, for example through recombinant methods. Furthermore, transmembrane proteins that have been made soluble can be made to be secreted through recombinant means by adding an appropriate signal sequence.

In a preferred embodiment, the CRC proteins are secreted proteins; the secretion of which can be either constitutive or regulated. These proteins have a signal peptide or signal sequence that targets the molecule to the secretory pathway. Secreted proteins are involved in numerous physiological events; by virtue of their circulating nature, they serve to transmit signals to various other cell types. The secreted protein may function in an autocrine manner (acting on the cell that secreted the factor), a paracrine manner (acting on cells in close proximity to the cell that secreted the factor) or an

endocrine manner (acting on cells at a distance). Thus secreted molecules find use in modulating or altering numerous aspects of physiology. CRC proteins that are secreted proteins are particularly preferred in the present invention as they serve as good targets for diagnostic markers, for example for blood tests.

- 5 A CRC sequence is initially identified by substantial nucleic acid and/or amino acid sequence homology to the CRC sequences outlined herein. Such homology can be based upon the overall nucleic acid or amino acid sequence, and is generally determined as outlined below, using either homology programs or hybridization conditions.

- 10 As used herein, a nucleic acid is a "CRC nucleic acid" if the overall homology of the nucleic acid sequence to the nucleic acid sequences encoding the amino acid sequences of the figures is preferably greater than about 75%, more preferably greater than about 80%, even more preferably greater than about 85% and most preferably greater than 90%. In some embodiments the homology will be as high as about 93 to 95 or 98%. Homology in this context means sequence similarity or identity, with identity being preferred. A preferred comparison for homology purposes is to compare  
15 the sequence containing sequencing errors to the correct sequence. This homology will be determined using standard techniques known in the art, including, but not limited to, the local homology algorithm of Smith & Waterman, Adv. Appl. Math. 2:482 (1981), by the homology alignment algorithm of Needleman & Wunsch, J. Mol. Biol. 48:443 (1970), by the search for similarity method of Pearson & Lipman, PNAS USA 85:2444 (1988), by computerized implementations of these algorithms  
20 (GAP, BESTFIT, FASTA, and TFASTA in the Wisconsin Genetics Software Package, Genetics Computer Group, 575 Science Drive, Madison, WI), the Best Fit sequence program described by Devereux et al., Nucl. Acid Res. 12:387-395 (1984), preferably using the default settings, or by inspection.

- 25 In a preferred embodiment, the sequences which are used to determine sequence identity or similarity are selected from the sequences set forth in the figures, preferably those represented in Figure 12, more preferably those represented in Figures 13A and 13B, still more preferably those of Figures 14-20, 22-25, 27-29, 31-33, 35-37 and 39-48, and fragments thereof. In one embodiment the sequences utilized herein are those set forth in the figures. In another embodiment, the sequences are naturally occurring allelic variants of the sequences set forth in the figures. In another embodiment, the  
30 sequences are sequence variants as further described herein.

One example of a useful algorithm is PILEUP. PILEUP creates a multiple sequence alignment from a group of related sequences using progressive, pairwise alignments. It can also plot a tree showing the



clustering relationships used to create the alignment. PILEUP uses a simplification of the progressive alignment method of Feng & Doolittle, *J. Mol. Evol.* 35:351-360 (1987); the method is similar to that described by Higgins & Sharp *CABIOS* 5:151-153 (1989). Useful PILEUP parameters including a default gap weight of 3.00, a default gap length weight of 0.10, and weighted end gaps.

5 Another example of a useful algorithm is the BLAST algorithm, described in Altschul et al., *J. Mol. Biol.* 215, 403-410, (1990) and Karlin et al., *PNAS USA* 90:5873-5787 (1993). A particularly useful BLAST program is the WU-BLAST-2 program which was obtained from Altschul et al., *Methods in Enzymology*, 266: 460-480 (1996); <http://blast.wustl.edu/blast/REACRCE.html>. WU-BLAST-2 uses several search parameters, most of which are set to the default values. The adjustable parameters  
10 are set with the following values: overlap span = 1, overlap fraction = 0.125, word threshold (T) = 11. The HSP S and HSP S2 parameters are dynamic values and are established by the program itself depending upon the composition of the particular sequence and composition of the particular database against which the sequence of interest is being searched; however, the values may be adjusted to increase sensitivity. A % amino acid sequence identity value is determined by the number  
15 of matching identical residues divided by the total number of residues of the "longer" sequence in the aligned region. The "longer" sequence is the one having the most actual residues in the aligned region (gaps introduced by WU-Blast-2 to maximize the alignment score are ignored).

Thus, "percent (%) nucleic acid sequence identity" is defined as the percentage of nucleotide residues in a candidate sequence that are identical with the nucleotide residues of the sequences of the figures.

20 A preferred method utilizes the BLASTN module of WU-BLAST-2 set to the default parameters, with overlap span and overlap fraction set to 1 and 0.125, respectively.

The alignment may include the introduction of gaps in the sequences to be aligned. In addition, for sequences which contain either more or fewer nucleosides than those of the figures, it is understood that the percentage of homology will be determined based on the number of homologous nucleosides  
25 in relation to the total number of nucleosides. Thus, for example, homology of sequences shorter than those of the sequences identified herein and as discussed below, will be determined using the number of nucleosides in the shorter sequence.

In one embodiment, the nucleic acid homology is determined through hybridization studies. Thus, for example, nucleic acids which hybridize under high stringency to the nucleic acid sequences which  
30 encode the peptides identified in the figures, or their complements, are considered a CRC sequence. High stringency conditions are known in the art; see for example Maniatis et al., *Molecular Cloning: A Laboratory Manual*, 2d Edition, 1989, and *Short Protocols in Molecular Biology*, ed. Ausubel, et al.,

both of which are hereby incorporated by reference. Stringent conditions are sequence-dependent and will be different in different circumstances. Longer sequences hybridize specifically at higher temperatures. An extensive guide to the hybridization of nucleic acids is found in Tijssen, Techniques in Biochemistry and Molecular Biology—Hybridization with Nucleic Acid Probes, "Overview of principles of hybridization and the strategy of nucleic acid assays" (1993). Generally, stringent conditions are selected to be about 5-10°C lower than the thermal melting point ( $T_m$ ) for the specific sequence at a defined ionic strength pH. The  $T_m$  is the temperature (under defined ionic strength, pH and nucleic acid concentration) at which 50% of the probes complementary to the target hybridize to the target sequence at equilibrium (as the target sequences are present in excess, at  $T_m$ , 50% of the probes are occupied at equilibrium). Stringent conditions will be those in which the salt concentration is less than about 1.0 M sodium ion, typically about 0.01 to 1.0 M sodium ion concentration (or other salts) at pH 7.0 to 8.3 and the temperature is at least about 30°C for short probes (e.g. 10 to 50 nucleotides) and at least about 60°C for long probes (e.g. greater than 50 nucleotides). Stringent conditions may also be achieved with the addition of destabilizing agents such as formamide.

In another embodiment, less stringent hybridization conditions are used; for example, moderate or low stringency conditions may be used, as are known in the art; see Maniatis and Ausubel, *supra*, and Tijssen, *supra*.

In addition, the CRC nucleic acid sequences of the invention are fragments of larger genes, i.e. they are nucleic acid segments. "Genes" in this context includes coding regions, non-coding regions, and mixtures of coding and non-coding regions. Accordingly, as will be appreciated by those in the art, using the sequences provided herein, additional sequences of the CRC genes can be obtained, using techniques well known in the art for cloning either longer sequences or the full length sequences; see Maniatis et al., and Ausubel, et al., *supra*, hereby expressly incorporated by reference.

Once the CRC nucleic acid is identified, it can be cloned and, if necessary, its constituent parts recombined to form the entire CRC nucleic acid. Once isolated from its natural source, e.g., contained within a plasmid or other vector or excised therefrom as a linear nucleic acid segment, the recombinant CRC nucleic acid can be further-used as a probe to identify and isolate other CRC nucleic acids, for example additional coding regions. It can also be used as a "precursor" nucleic acid to make modified or variant CRC nucleic acids and proteins.

The CRC nucleic acids of the present invention are used in several ways. In a first embodiment, nucleic acid probes to the CRC nucleic acids are made and attached to biochips to be used in screening and diagnostic methods, as outlined below, or for administration, for example for gene

therapy and/or antisense applications. Alternatively, the CRC nucleic acids that include coding regions of CRC proteins can be put into expression vectors for the expression of CRC proteins, again either for screening purposes or for administration to a patient.

5 In a preferred embodiment, nucleic acid probes to CRC nucleic acids (both the nucleic acid sequences encoding peptides outlined in the figures and/or the complements thereof) are made. The nucleic acid probes attached to the biochip are designed to be substantially complementary to the CRC nucleic acids, i.e. the target sequence (either the target sequence of the sample or to other probe sequences, for example in sandwich assays), such that hybridization of the target sequence and the probes of the present invention occurs. As outlined below, this complementarity need not be  
10 perfect; there may be any number of base pair mismatches which will interfere with hybridization between the target sequence and the single stranded nucleic acids of the present invention. However, if the number of mutations is so great that no hybridization can occur under even the least stringent of hybridization conditions, the sequence is not a complementary target sequence. Thus, by  
15 "substantially complementary" herein is meant that the probes are sufficiently complementary to the target sequences to hybridize under normal reaction conditions, particularly high stringency conditions, as outlined herein.

A nucleic acid probe is generally single stranded but can be partially single and partially double stranded. The strandedness of the probe is dictated by the structure, composition, and properties of the target sequence. In general, the nucleic acid probes range from about 8 to about 100 bases long,  
20 with from about 10 to about 80 bases being preferred, and from about 30 to about 50 bases being particularly preferred. That is, generally whole genes are not used. In some embodiments, much longer nucleic acids can be used, up to hundreds of bases.

In a preferred embodiment, more than one probe per sequence is used, with either overlapping probes or probes to different sections of the target being used. That is, two, three, four or more  
25 probes, with three being preferred, are used to build in a redundancy for a particular target. The probes can be overlapping (i.e. have some sequence in common), or separate.

As will be appreciated by those in the art, nucleic acids can be attached or immobilized to a solid support in a wide variety of ways. By "immobilized" and grammatical equivalents herein is meant the association or binding between the nucleic acid probe and the solid support is sufficient to be stable  
30 under the conditions of binding, washing, analysis, and removal as outlined below. The binding can be covalent or non-covalent. By "non-covalent binding" and grammatical equivalents herein is meant one or more of either electrostatic, hydrophilic, and hydrophobic interactions. Included in non-covalent

binding is the covalent attachment of a molecule, such as, streptavidin to the support and the non-covalent binding of the biotinylated probe to the streptavidin. By "covalent binding" and grammatical equivalents herein is meant that the two moieties, the solid support and the probe, are attached by at least one bond, including sigma bonds, pi bonds and coordination bonds. Covalent bonds can be formed directly between the probe and the solid support or can be formed by a cross linker or by inclusion of a specific reactive group on either the solid support or the probe or both molecules. Immobilization may also involve a combination of covalent and non-covalent interactions.

In general, the probes are attached to the biochip in a wide variety of ways, as will be appreciated by those in the art. As described herein, the nucleic acids can either be synthesized first, with subsequent attachment to the biochip, or can be directly synthesized on the biochip.

The biochip comprises a suitable solid substrate. By "substrate" or "solid support" or other grammatical equivalents herein is meant any material that can be modified to contain discrete individual sites appropriate for the attachment or association of the nucleic acid probes and is amenable to at least one detection method. As will be appreciated by those in the art, the number of possible substrates are very large, and include, but are not limited to, glass and modified or functionalized glass, plastics (including acrylics, polystyrene and copolymers of styrene and other materials, polypropylene, polyethylene, polybutylene, polyurethanes, Teflon, etc.), polysaccharides, nylon or nitrocellulose, resins, silica or silica-based materials including silicon and modified silicon, carbon, metals, inorganic glasses, plastics, etc. In general, the substrates allow optical detection and do not appreciably fluoresce. A preferred substrate is described in copending application entitled Reusable Low Fluorescent Plastic Biochip, U.S. Application Serial No. 09/270,214, filed March 15, 1999, herein incorporated by reference in its entirety.

Generally the substrate is planar, although as will be appreciated by those in the art, other configurations of substrates may be used as well. For example, the probes may be placed on the inside surface of a tube, for flow-through sample analysis to minimize sample volume. Similarly, the substrate may be flexible, such as a flexible foam, including closed cell foams made of particular plastics.

In a preferred embodiment, the surface of the biochip and the probe may be derivatized with chemical functional groups for subsequent attachment of the two. Thus, for example, the biochip is derivatized with a chemical functional group including, but not limited to, amino groups, carboxy groups, oxo groups and thiol groups, with amino groups being particularly preferred. Using these functional groups, the probes can be attached using functional groups on the probes. For example, nucleic

acids containing amino groups can be attached to surfaces comprising amino groups, for example using linkers as are known in the art; for example, homo-or hetero-bifunctional linkers as are well known (see 1994 Pierce Chemical Company catalog, technical section on cross-linkers, pages 155-200, incorporated herein by reference). In addition, in some cases, additional linkers, such as alkyl groups (including substituted and heteroalkyl groups) may be used.

In this embodiment, the oligonucleotides are synthesized as is known in the art, and then attached to the surface of the solid support. As will be appreciated by those skilled in the art, either the 5' or 3' terminus may be attached to the solid support, or attachment may be via an internal nucleoside.

In an additional embodiment, the immobilization to the solid support may be very strong, yet non-covalent. For example, biotinylated oligonucleotides can be made, which bind to surfaces covalently coated with streptavidin, resulting in attachment.

Alternatively, the oligonucleotides may be synthesized on the surface, as is known in the art. For example, photoactivation techniques utilizing photopolymerization compounds and techniques are used. In a preferred embodiment, the nucleic acids can be synthesized in situ, using well known photolithographic techniques, such as those described in WO 95/25116; WO 95/35505; U.S. Patent Nos. 5,700,637 and 5,445,934; and references cited within, all of which are expressly incorporated by reference; these methods of attachment form the basis of the Affimetrix GeneChip™ technology.

In a preferred embodiment, CRC nucleic acids encoding CRC proteins are used to make a variety of expression vectors to express CRC proteins which can then be used in screening assays, as described below. The expression vectors may be either self-replicating extrachromosomal vectors or vectors which integrate into a host genome. Generally, these expression vectors include transcriptional and translational regulatory nucleic acid operably linked to the nucleic acid encoding the CRC protein. The term "control sequences" refers to DNA sequences necessary for the expression of an operably linked coding sequence in a particular host organism. The control sequences that are suitable for prokaryotes, for example, include a promoter, optionally an operator sequence, and a ribosome binding site. Eukaryotic cells are known to utilize promoters, polyadenylation signals, and enhancers.

Nucleic acid is "operably linked" when it is placed into a functional relationship with another nucleic acid sequence. For example, DNA for a presequence or secretory leader is operably linked to DNA for a polypeptide if it is expressed as a preprotein that participates in the secretion of the polypeptide; a promoter or enhancer is operably linked to a coding sequence if it affects the transcription of the

sequence; or a ribosome binding site is operably linked to a coding sequence if it is positioned so as to facilitate translation. Generally, "operably linked" means that the DNA sequences being linked are contiguous, and, in the case of a secretory leader, contiguous and in reading phase. However, enhancers do not have to be contiguous. Linking is accomplished by ligation at convenient restriction sites. If such sites do not exist, the synthetic oligonucleotide adaptors or linkers are used in accordance with conventional practice. The transcriptional and translational regulatory nucleic acid will generally be appropriate to the host cell used to express the CRC protein; for example, transcriptional and translational regulatory nucleic acid sequences from *Bacillus* are preferably used to express the CRC protein in *Bacillus*. Numerous types of appropriate expression vectors, and suitable regulatory sequences are known in the art for a variety of host cells.

In general, the transcriptional and translational regulatory sequences may include, but are not limited to, promoter sequences, ribosomal binding sites, transcriptional start and stop sequences, translational start and stop sequences, and enhancer or activator sequences. In a preferred embodiment, the regulatory sequences include a promoter and transcriptional start and stop sequences.

Promoter sequences encode either constitutive or inducible promoters. The promoters may be either naturally occurring promoters or hybrid promoters. Hybrid promoters, which combine elements of more than one promoter, are also known in the art, and are useful in the present invention.

In addition, the expression vector may comprise additional elements. For example, the expression vector may have two replication systems, thus allowing it to be maintained in two organisms, for example in mammalian or insect cells for expression and in a procaryotic host for cloning and amplification. Furthermore, for integrating expression vectors, the expression vector contains at least one sequence homologous to the host cell genome, and preferably two homologous sequences which flank the expression construct. The integrating vector may be directed to a specific locus in the host cell by selecting the appropriate homologous sequence for inclusion in the vector. Constructs for integrating vectors are well known in the art.

In addition, in a preferred embodiment, the expression vector contains a selectable marker gene to allow the selection of transformed host cells. Selection genes are well known in the art and will vary with the host cell used.

The CRC proteins of the present invention are produced by culturing a host cell transformed with an expression vector containing nucleic acid encoding a CRC protein, under the appropriate conditions to

induce or cause expression of the CRC protein. The conditions appropriate for CRC protein expression will vary with the choice of the expression vector and the host cell, and will be easily ascertained by one skilled in the art through routine experimentation. For example, the use of constitutive promoters in the expression vector will require optimizing the growth and proliferation of the host cell, while the use of an inducible promoter requires the appropriate growth conditions for induction. In addition, in some embodiments, the timing of the harvest is important. For example, the baculoviral systems used in insect cell expression are lytic viruses, and thus harvest time selection can be crucial for product yield.

Appropriate host cells include yeast, bacteria, archaeobacteria, fungi, and insect and animal cells, including mammalian cells. Of particular interest are *Drosophila melanogaster* cells, *Saccharomyces cerevisiae* and other yeasts, *E. coli*, *Bacillus subtilis*, Sf9 cells, C129 cells, 293 cells, *Neurospora*, BHK, CHO, COS, HeLa cells, THP1 cell line (a macrophage cell line) and human cells and cell lines.

In a preferred embodiment, the CRC proteins are expressed in mammalian cells. Mammalian expression systems are also known in the art, and include retroviral systems. A preferred expression vector system is a retroviral vector system such as is generally described in PCT/US97/01019 and PCT/US97/01048, both of which are hereby expressly incorporated by reference. Of particular use as mammalian promoters are the promoters from mammalian viral genes, since the viral genes are often highly expressed and have a broad host range. Examples include the SV40 early promoter, mouse mammary tumor virus LTR promoter, adenovirus major late promoter, herpes simplex virus promoter, and the CMV promoter. Typically, transcription termination and polyadenylation sequences recognized by mammalian cells are regulatory regions located 3' to the translation stop codon and thus, together with the promoter elements, flank the coding sequence. Examples of transcription terminator and polyadenylation signals include those derived from SV40.

The methods of introducing exogenous nucleic acid into mammalian hosts, as well as other hosts, is well known in the art, and will vary with the host cell used. Techniques include dextran-mediated transfection, calcium phosphate precipitation, polybrene mediated transfection, protoplast fusion, electroporation, viral infection, encapsulation of the polynucleotide(s) in liposomes, and direct microinjection of the DNA into nuclei.

In a preferred embodiment, CRC proteins are expressed in bacterial systems. Bacterial expression systems are well known in the art. Promoters from bacteriophage may also be used and are known in the art. In addition, synthetic promoters and hybrid promoters are also useful; for example, the tac promoter is a hybrid of the trp and lac promoter sequences. Furthermore, a bacterial promoter can

include naturally occurring promoters of non-bacterial origin that have the ability to bind bacterial RNA polymerase and initiate transcription. In addition to a functioning promoter sequence, an efficient ribosome binding site is desirable. The expression vector may also include a signal peptide sequence that provides for secretion of the CRC protein in bacteria. The protein is either secreted into the growth media (gram-positive bacteria) or into the periplasmic space, located between the inner and outer membrane of the cell (gram-negative bacteria). The bacterial expression vector may also include a selectable marker gene to allow for the selection of bacterial strains that have been transformed. Suitable selection genes include genes which render the bacteria resistant to drugs such as ampicillin, chloramphenicol, erythromycin, kanamycin, neomycin and tetracycline. Selectable markers also include biosynthetic genes, such as those in the histidine, tryptophan and leucine biosynthetic pathways. These components are assembled into expression vectors. Expression vectors for bacteria are well known in the art, and include vectors for *Bacillus subtilis*, *E. coli*, *Streptococcus cremoris*, and *Streptococcus lividans*, among others. The bacterial expression vectors are transformed into bacterial host cells using techniques well known in the art, such as calcium chloride treatment, electroporation, and others.

In one embodiment, CRC proteins are produced in insect cells. Expression vectors for the transformation of insect cells, and in particular, baculovirus-based expression vectors, are well known in the art.

In a preferred embodiment, CRC protein is produced in yeast cells. Yeast expression systems are well known in the art, and include expression vectors for *Saccharomyces cerevisiae*, *Candida albicans* and *C. maltosa*, *Hansenula polymorpha*, *Kluyveromyces fragilis* and *K. lactis*, *Pichia guillermondii* and *P. pastoris*, *Schizosaccharomyces pombe*, and *Yarrowia lipolytica*.

The CRC protein may also be made as a fusion protein, using techniques well known in the art. Thus, for example, for the creation of monoclonal antibodies, if the desired epitope is small, the CRC protein may be fused to a carrier protein to form an immunogen. Alternatively, the CRC protein may be made as a fusion protein to increase expression, or for other reasons. For example, when the CRC protein is a CRC peptide, the nucleic acid encoding the peptide may be linked to other nucleic acid for expression purposes.

In one embodiment, the CRC nucleic acids, proteins and antibodies of the invention are labeled. By "labeled" herein is meant that a compound has at least one element, isotope or chemical compound attached to enable the detection of the compound. In general, labels fall into three classes: a) isotopic labels, which may be radioactive or heavy isotopes; b) immune labels, which may be antibodies or



antigens; and c) colored or fluorescent dyes. The labels may be incorporated into the CRC nucleic acids, proteins and antibodies at any position. For example, the label should be capable of producing, either directly or indirectly, a detectable signal. The detectable moiety may be a radioisotope, such as  $^3\text{H}$ ,  $^{14}\text{C}$ ,  $^{32}\text{P}$ ,  $^{35}\text{S}$ , or  $^{125}\text{I}$ , a fluorescent or chemiluminescent compound, such as fluorescein isothiocyanate, rhodamine, or luciferin, or an enzyme, such as alkaline phosphatase, beta-galactosidase or horseradish peroxidase. Any method known in the art for conjugating the antibody to the label may be employed, including those methods described by Hunter et al., Nature, 144:945 (1962); David et al., Biochemistry, 13:1014 (1974); Pain et al., J. Immunol. Meth., 40:219 (1981); and Nygren, J. Histochem. and Cytochem., 30:407 (1982).

Accordingly, the present invention also provides CRC protein sequences. A CRC protein of the present invention may be identified in several ways. "Protein" in this sense includes proteins, polypeptides, and peptides. As will be appreciated by those in the art, the nucleic acid sequences of the invention can be used to generate protein sequences. There are a variety of ways to do this, including cloning the entire gene and verifying its frame and amino acid sequence, or by comparing it to known sequences to search for homology to provide a frame, assuming the CRC protein has homology to some protein in the database being used. Generally, the nucleic acid sequences are input into a program that will search all three frames for homology. This is done in a preferred embodiment using the following NCBI Advanced BLAST parameters. The program is blastx or blastn. The database is nr. The input data is as "Sequence in FASTA format". The organism list is "none". The "expect" is 10; the filter is default. The "descriptions" is 500, the "alignments" is 500, and the "alignment view" is pairwise. The "Query Genetic Codes" is standard (1). The matrix is BLOSUM62; gap existence cost is 11, per residue gap cost is 1; and the lambda ratio is .85 default. This results in the generation of a putative protein sequence.

Also included within one embodiment of CRC proteins are amino acid variants of the naturally occurring sequences, as determined herein. Preferably, the variants are preferably greater than about 75% homologous to the wild-type sequence, more preferably greater than about 80%, even more preferably greater than about 85% and most preferably greater than 90%. In some embodiments the homology will be as high as about 93 to 95 or 98%. As for nucleic acids, homology in this context means sequence similarity or identity, with identity being preferred. This homology will be determined using standard techniques known in the art as are outlined above for the nucleic acid homologies.

CRC proteins of the present invention may be shorter or longer than the wild type amino acid sequences. Thus, in a preferred embodiment, included within the definition of CRC proteins are portions or fragments of the wild type sequences. herein. In addition, as outlined above, the CRC

nucleic acids of the invention may be used to obtain additional coding regions, and thus additional protein sequence, using techniques known in the art.

5 In a preferred embodiment, the CRC proteins are derivative or variant CRC proteins as compared to the wild-type sequence. That is, as outlined more fully below, the derivative CRC peptide will contain at least one amino acid substitution, deletion or insertion, with amino acid substitutions being particularly preferred. The amino acid substitution, insertion or deletion may occur at any residue within the CRC peptide.

10 Also included in an embodiment of CRC proteins of the present invention are amino acid sequence variants. These variants fall into one or more of three classes: substitutional, insertional or deletional variants. These variants ordinarily are prepared by site specific mutagenesis of nucleotides in the DNA encoding the CRC protein, using cassette or PCR mutagenesis or other techniques well known in the art, to produce DNA encoding the variant, and thereafter expressing the DNA in recombinant cell culture as outlined above. However, variant CRC protein fragments having up to about 100-150 residues may be prepared by in vitro synthesis using established techniques. Amino acid sequence variants are characterized by the predetermined nature of the variation, a feature that sets them apart from naturally occurring allelic or interspecies variation of the CRC protein amino acid sequence. The variants typically exhibit the same qualitative biological activity as the naturally occurring analogue, although variants can also be selected which have modified characteristics as will be more fully outlined below.

20 While the site or region for introducing an amino acid sequence variation is predetermined, the mutation per se need not be predetermined. For example, in order to optimize the performance of a mutation at a given site, random mutagenesis may be conducted at the target codon or region and the expressed CRC variants screened for the optimal combination of desired activity. Techniques for making substitution mutations at predetermined sites in DNA having a known sequence are well known, for example, M13 primer mutagenesis and PCR mutagenesis. Screening of the mutants is done using assays of CRC protein activities.

Amino acid substitutions are typically of single residues; insertions usually will be on the order of from about 1 to 20 amino acids, although considerably larger insertions may be tolerated. Deletions range from about 1 to about 20 residues, although in some cases deletions may be much larger.

30 Substitutions, deletions, insertions or any combination thereof may be used to arrive at a final derivative. Generally these changes are done on a few amino acids to minimize the alteration of the

molecule. However, larger changes may be tolerated in certain circumstances. When small alterations in the characteristics of the CRC protein are desired, substitutions are generally made in accordance with the following chart:

Chart I  
Exemplary Substitutions

5	Original Residue	
	Ala	Ser
	Arg	Lys
	Asn	Gln, His
	Asp	Glu
10	Cys	Ser
	Gln	Asn
	Glu	Asp
	Gly	Pro
	His	Asn, Gln
15	Ile	Leu, Val
	Leu	Ile, Val
	Lys	Arg, Gln, Glu
	Met	Leu, Ile
	Phe	Met, Leu, Tyr
20	Ser	Thr
	Thr	Ser
	Trp	Tyr
	Tyr	Trp, Phe
	Val	Ile, Leu
25	Substantial changes in function or immunological identity are made by selecting substitutions that are less conservative than those shown in Chart I. For example, substitutions may be made which more significantly affect: the structure of the polypeptide backbone in the area of the alteration, for example the alpha-helical or beta-sheet structure; the charge or hydrophobicity of the molecule at the target site; or the bulk of the side chain. The substitutions which in general are expected to produce the	
30	greatest changes in the polypeptide's properties are those in which (a) a hydrophilic residue, e.g. seryl or threonyl is substituted for (or by) a hydrophobic residue, e.g. leucyl, isoleucyl, phenylalanyl, valyl or alanyl; (b) a cysteine or proline is substituted for (or by) any other residue; (c) a residue having an electropositive side chain, e.g. lysyl, arginyl, or histidyl, is substituted for (or by) an electronegative residue, e.g. glutamyl or aspartyl; or (d) a residue having a bulky side chain, e.g. phenylalanine, is	
35	substituted for (or by) one not having a side chain, e.g. glycine.	

The variants typically exhibit the same qualitative biological activity and will elicit the same immune response as the naturally-occurring analogue, although variants also are selected to modify the characteristics of the CRC proteins as needed. Alternatively, the variant may be designed such that the biological activity of the CRC protein is altered. For example, glycosylation sites may be altered or removed.

Covalent modifications of CRC polypeptides are included within the scope of this invention. One type of covalent modification includes reacting targeted amino acid residues of a CRC polypeptide with an organic derivatizing agent that is capable of reacting with selected side chains or the N-or C-terminal residues of a CRC polypeptide. Derivatization with bifunctional agents is useful, for instance, for crosslinking CRC to a water-insoluble support matrix or surface for use in the method for purifying anti-CRC antibodies or screening assays, as is more fully described below. Commonly used crosslinking agents include, e.g., 1,1-bis(diazoacetyl)-2-phenylethane, glutaraldehyde, N-hydroxy-succinimide esters, for example, esters with 4-azidosalicylic acid, homobifunctional imidoesters, including disuccinimidyl esters such as 3,3'-dithiobis(succinimidylpropionate), bifunctional maleimides such as bis-N-maleimido-1,8-octane and agents such as methyl-3-[(p-azidophenyl)dithio]propioimide.

Other modifications include deamidation of glutamyl and asparaginy residues to the corresponding glutamyl and aspartyl residues, respectively, hydroxylation of proline and lysine, phosphorylation of hydroxyl groups of seryl, threonyl or tyrosyl residues, methylation of the  $\alpha$ -amino groups of lysine, arginine, and histidine side chains [T.E. Creighton, *Proteins: Structure and Molecular Properties*, W.H. Freeman & Co., San Francisco, pp. 79-86 (1983)], acetylation of the N-terminal amine, and amidation of any C-terminal carboxyl group.

Another type of covalent modification of the CRC polypeptide included within the scope of this invention comprises altering the native glycosylation pattern of the polypeptide. "Altering the native glycosylation pattern" is intended for purposes herein to mean deleting one or more carbohydrate moieties found in native sequence CRC polypeptide, and/or adding one or more glycosylation sites that are not present in the native sequence CRC polypeptide.

Addition of glycosylation sites to CRC polypeptides may be accomplished by altering the amino acid sequence thereof. The alteration may be made, for example, by the addition of, or substitution by, one or more serine or threonine residues to the native sequence CRC polypeptide (for O-linked glycosylation sites). The CRC amino acid sequence may optionally be altered through changes at the DNA level, particularly by mutating the DNA encoding the CRC polypeptide at preselected bases such that codons are generated that will translate into the desired amino acids.

Another means of increasing the number of carbohydrate moieties on the CRC polypeptide is by chemical or enzymatic coupling of glycosides to the polypeptide. Such methods are described in the art, e.g., in WO 87/05330 published 11 September 1987, and in Aplin and Wriston, *CRC Crit. Rev. Biochem.*, pp. 259-306 (1981).

Removal of carbohydrate moieties present on the CRC polypeptide may be accomplished chemically or enzymatically or by mutational substitution of codons encoding for amino acid residues that serve as targets for glycosylation. Chemical deglycosylation techniques are known in the art and described, for instance, by Hakimuddin, et al., Arch. Biochem. Biophys., 259:52 (1987) and by Edge et al., Anal. Biochem., 118:131 (1981). Enzymatic cleavage of carbohydrate moieties on polypeptides can be achieved by the use of a variety of endo-and exo-glycosidases as described by Thotakura et al., Meth. Enzymol., 138:350 (1987).

Another type of covalent modification of CRC comprises linking the CRC polypeptide to one of a variety of nonproteinaceous polymers, e.g., polyethylene glycol, polypropylene glycol, or polyoxyalkylenes, in the manner set forth in U.S. Patent Nos. 4,640,835; 4,496,689; 4,301,144; 4,670,417; 4,791,192 or 4,179,337.

CRC polypeptides of the present invention may also be modified in a way to form chimeric molecules comprising a CRC polypeptide fused to another, heterologous polypeptide or amino acid sequence. In one embodiment, such a chimeric molecule comprises a fusion of a CRC polypeptide with a tag polypeptide which provides an epitope to which an anti-tag antibody can selectively bind. The epitope tag is generally placed at the amino-or carboxyl-terminus of the CRC polypeptide. The presence of such epitope-tagged forms of a CRC polypeptide can be detected using an antibody against the tag polypeptide. Also, provision of the epitope tag enables the CRC polypeptide to be readily purified by affinity purification using an anti-tag antibody or another type of affinity matrix that binds to the epitope tag. In an alternative embodiment, the chimeric molecule may comprise a fusion of a CRC polypeptide with an immunoglobulin or a particular region of an immunoglobulin. For a bivalent form of the chimeric molecule, such a fusion could be to the Fc region of an IgG molecule.

Various tag polypeptides and their respective antibodies are well known in the art. Examples include poly-histidine (poly-his) or poly-histidine-glycine (poly-his-gly) tags; the flu HA tag polypeptide and its antibody 12CA5 [Field et al., Mol. Cell. Biol., 8:2159-2165 (1988)]; the c-myc tag and the 8F9, 3C7, 6E10, G4, B7 and 9E10 antibodies thereto [Evan et al., Molecular and Cellular Biology, 5:3610-3616 (1985)]; and the Herpes Simplex virus glycoprotein D (gD) tag and its antibody [Paborsky et al., Protein Engineering, 3(6):547-553 (1990)]. Other tag polypeptides include the Flag-peptide [Hopp et al., BioTechnology, 6:1204-1210 (1988)]; the KT3 epitope peptide [Martin et al., Science, 255:192-194 (1992)]; tubulin epitope peptide [Skinner et al., J. Biol. Chem., 266:15163-15166 (1991)]; and the T7 gene 10 protein peptide tag [Lutz-Freyermuth et al., Proc. Natl. Acad. Sci. USA, 87:6393-6397 (1990)].

Also included with the definition of CRC protein in one embodiment are other CRC proteins of the CRC family, and CRC proteins from other organisms, which are cloned and expressed as outlined below. Thus, probe or degenerate polymerase chain reaction (PCR) primer sequences may be used to find other related CRC proteins from humans or other organisms. As will be appreciated by those in the art, particularly useful probe and/or PCR primer sequences include the unique areas of the CRC nucleic acid sequence. As is generally known in the art, preferred PCR primers are from about 15 to about 35 nucleotides in length, with from about 20 to about 30 being preferred, and may contain inosine as needed. The conditions for the PCR reaction are well known in the art.

In addition, as is outlined herein, CRC proteins can be made that are longer than those depicted in the figures, for example, by the elucidation of additional sequences, the addition of epitope or purification tags, the addition of other fusion sequences, etc.

CRC proteins may also be identified as being encoded by CRC nucleic acids. Thus, CRC proteins are encoded by nucleic acids that will hybridize to the sequences of the sequence listings, or their complements, as outlined herein.

In a preferred embodiment, when the CRC protein is to be used to generate antibodies, for example for immunotherapy, the CRC protein should share at least one epitope or determinant with the full length protein. By "epitope" or "determinant" herein is meant a portion of a protein which will generate and/or bind an antibody or T-cell receptor in the context of MHC. Thus, in most instances, antibodies made to a smaller CRC protein will be able to bind to the full length protein. In a preferred embodiment, the epitope is unique; that is, antibodies generated to a unique epitope show little or no cross-reactivity. In a preferred embodiment, the epitope is selected from CAA2p1 and CAA2p2. In another preferred embodiment, the epitope is selected from CAA9p1, CAA9p2, CAA9p3, CAAQ9p4, CAA9p4MAPS, CAA89p5 and CAA9p5MAPS.

In one embodiment, the term "antibody" includes antibody fragments, as are known in the art, including Fab, Fab<sub>2</sub>, single chain antibodies (Fv for example), chimeric antibodies, etc., either produced by the modification of whole antibodies or those synthesized de novo using recombinant DNA technologies.

Methods of preparing polyclonal antibodies are known to the skilled artisan. Polyclonal antibodies can be raised in a mammal, for example, by one or more injections of an immunizing agent and, if desired, an adjuvant. Typically, the immunizing agent and/or adjuvant will be injected in the mammal by multiple subcutaneous or intraperitoneal injections. The immunizing agent may include the CAA2 or

fragment thereof or a fusion protein thereof. It may be useful to conjugate the immunizing agent to a protein known to be immunogenic in the mammal being immunized. Examples of such immunogenic proteins include but are not limited to keyhole limpet hemocyanin, serum albumin, bovine thyroglobulin, and soybean trypsin inhibitor. Examples of adjuvants which may be employed include Freund's complete adjuvant and MPL-TDM adjuvant (monophosphoryl Lipid A, synthetic trehalose dicorynomycolate). The immunization protocol may be selected by one skilled in the art without undue experimentation.

The antibodies may, alternatively, be monoclonal antibodies. Monoclonal antibodies may be prepared using hybridoma methods, such as those described by Kohler and Milstein, Nature, 256:495 (1975).

In a hybridoma method, a mouse, hamster, or other appropriate host animal, is typically immunized with an immunizing agent to elicit lymphocytes that produce or are capable of producing antibodies that will specifically bind to the immunizing agent. Alternatively, the lymphocytes may be immunized *in vitro*. The immunizing agent will typically include the CAA2 polypeptide or fragment thereof or a fusion protein thereof. Generally, either peripheral blood lymphocytes ("PBLs") are used if cells of human origin are desired, or spleen cells or lymph node cells are used if non-human mammalian sources are desired. The lymphocytes are then fused with an immortalized cell line using a suitable fusing agent, such as polyethylene glycol, to form a hybridoma cell [Goding, Monoclonal Antibodies: Principles and Practice, Academic Press, (1986) pp. 59-103]. Immortalized cell lines are usually transformed mammalian cells, particularly myeloma cells of rodent, bovine and human origin. Usually, rat or mouse myeloma cell lines are employed. The hybridoma cells may be cultured in a suitable culture medium that preferably contains one or more substances that inhibit the growth or survival of the unfused, immortalized cells. For example, if the parental cells lack the enzyme hypoxanthine guanine phosphoribosyl transferase (HGPRT or HPRT), the culture medium for the hybridomas typically will include hypoxanthine, aminopterin, and thymidine ("HAT medium"), which substances prevent the growth of HGPRT-deficient cells.

In one embodiment, the antibodies are bispecific antibodies. Bispecific antibodies are monoclonal, preferably human or humanized, antibodies that have binding specificities for at least two different antigens. In the present case, one of the binding specificities is for a CRC protein or a fragment thereof, the other one is for any other antigen, and preferably for a cell-surface protein or receptor or receptor subunit, preferably one that is tumor specific.

In a preferred embodiment, the antibodies to CRC are capable of reducing or eliminating the biological function of CRC, as is described below. That is, the addition of anti-CRC antibodies (either polyclonal or preferably monoclonal) to CRC (or cells containing CRC) may reduce or eliminate the CRC activity.

Generally, at least a 25% decrease in activity is preferred, with at least about 50% being particularly preferred and about a 95-100% decrease being especially preferred.

In a preferred embodiment the antibodies to the CRC proteins are humanized antibodies. Humanized forms of non-human (e.g., murine) antibodies are chimeric molecules of immunoglobulins, immunoglobulin chains or fragments thereof (such as Fv, Fab, Fab', F(ab')<sub>2</sub> or other antigen-binding subsequences of antibodies) which contain minimal sequence derived from non-human immunoglobulin. Humanized antibodies include human immunoglobulins (recipient antibody) in which residues form a complementary determining region (CDR) of the recipient are replaced by residues from a CDR of a non-human species (donor antibody) such as mouse, rat or rabbit having the desired specificity, affinity and capacity. In some instances, Fv framework residues of the human immunoglobulin are replaced by corresponding non-human residues. Humanized antibodies may also comprise residues which are found neither in the recipient antibody nor in the imported CDR or framework sequences. In general, the humanized antibody will comprise substantially all of at least one, and typically two, variable domains, in which all or substantially all of the CDR regions correspond to those of a non-human immunoglobulin and all or substantially all of the FR regions are those of a human immunoglobulin consensus sequence. The humanized antibody optimally also will comprise at least a portion of an immunoglobulin constant region (Fc), typically that of a human immunoglobulin [Jones et al., *Nature*, 321:522-525 (1986); Riechmann et al., *Nature*, 332:323-329 (1988); and Presta, *Curr. Op. Struct. Biol.*, 2:593-596 (1992)].

Methods for humanizing non-human antibodies are well known in the art. Generally, a humanized antibody has one or more amino acid residues introduced into it from a source which is non-human. These non-human amino acid residues are often referred to as import residues, which are typically taken from an import variable domain. Humanization can be essentially performed following the method of Winter and co-workers [Jones et al., *Nature*, 321:522-525 (1986); Riechmann et al., *Nature*, 332:323-327 (1988); Verhoeyen et al., *Science*, 239:1534-1536 (1988)], by substituting rodent CDRs or CDR sequences for the corresponding sequences of a human antibody. Accordingly, such humanized antibodies are chimeric antibodies (U.S. Patent No. 4,816,567), wherein substantially less than an intact human variable domain has been substituted by the corresponding sequence from a non-human species. In practice, humanized antibodies are typically human antibodies in which some CDR residues and possibly some FR residues are substituted by residues from analogous sites in rodent antibodies.

Human antibodies can also be produced using various techniques known in the art, including phage display libraries [Hoogenboom and Winter, *J. Mol. Biol.*, 227:381 (1991); Marks et al., *J. Mol. Biol.*,



222:581 (1991)]. The techniques of Cole et al. and Boerner et al. are also available for the preparation of human monoclonal antibodies (Cole et al., Monoclonal Antibodies and Cancer Therapy, Alan R. Liss, p. 77 (1985) and Boerner et al., J. Immunol., 147(1):86-95 (1991)]. Similarly, human antibodies can be made by introducing of human immunoglobulin loci into transgenic animals, e.g., mice in which the endogenous immunoglobulin genes have been partially or completely inactivated. Upon challenge, human antibody production is observed, which closely resembles that seen in humans in all respects, including gene rearrangement, assembly, and antibody repertoire. This approach is described, for example, in U.S. Patent Nos. 5,545,807; 5,545,806; 5,569,825; 5,625,126; 5,633,425; 5,661,016, and in the following scientific publications: Marks et al., Bio/Technology 10, 779-783 (1992); Lonberg et al., Nature 368 856-859 (1994); Morrison, Nature 368, 812-13 (1994); Fishwild et al., Nature Biotechnology 14, 845-51 (1996); Neuberger, Nature Biotechnology 14, 826 (1996); Lonberg and Huszar, Intern. Rev. Immunol. 13 65-93 (1995).

By immunotherapy is meant treatment of CRC with an antibody raised against CRC proteins. As used herein, immunotherapy can be passive or active. Passive immunotherapy as defined herein is the passive transfer of antibody to a recipient (patient). Active immunization is the induction of antibody and/or T-cell responses in a recipient (patient). Induction of an immune response is the result of providing the recipient with an antigen to which antibodies are raised. As appreciated by one of ordinary skill in the art, the antigen may be provided by injecting a polypeptide against which antibodies are desired to be raised into a recipient, or contacting the recipient with a nucleic acid capable of expressing the antigen and under conditions for expression of the antigen.

In a preferred embodiment the CRC proteins against which antibodies are raised are secreted proteins as described above. Without being bound by theory, antibodies used for treatment, bind and prevent the secreted protein from binding to its receptor, thereby inactivating the secreted CRC protein.

In another preferred embodiment, the CRC protein to which antibodies are raised is a transmembrane protein. Without being bound by theory, antibodies used for treatment, bind the extracellular domain of the CRC protein and prevent it from binding to other proteins, such as circulating ligands or cell-associated molecules. The antibody may cause down-regulation of the transmembrane CRC protein. As will be appreciated by one of ordinary skill in the art, the antibody may be a competitive, non-competitive or uncompetitive inhibitor of protein binding to the extracellular domain of the CRC protein. The antibody is also an antagonist of the CRC protein. Further, the antibody prevents activation of the transmembrane CRC protein. In one aspect, when the antibody prevents the binding of other molecules to the CRC protein, the antibody prevents growth of the cell. The antibody also sensitizes

the cell to cytotoxic agents, including, but not limited to TNF-a, TNF-b, IL-1, INF-g and IL-2, or chemotherapeutic agents including 5FU, vinblastine, actinomycin D, cisplatin, methotrexate, and the like. In some instances the antibody belongs to a sub-type that activates serum complement when complexed with the transmembrane protein thereby mediating cytotoxicity. Thus, CRC is treated by administering to a patient antibodies directed against the transmembrane CRC protein.

In another preferred embodiment, the antibody is conjugated to a therapeutic moiety. In one aspect the therapeutic moiety is a small molecule that modulates the activity of the CRC protein. In another aspect the therapeutic moiety modulates the activity of molecules associated with or in close proximity to the CRC protein. The therapeutic moiety may inhibit enzymatic activity such as protease or protein kinase activity associated with CRC.

In a preferred embodiment, the therapeutic moiety may also be a cytotoxic agent. In this method, targeting the cytotoxic agent to tumor tissue or cells, results in a reduction in the number of afflicted cells, thereby reducing symptoms associated with CRC. Cytotoxic agents are numerous and varied and include, but are not limited to, cytotoxic drugs or toxins or active fragments of such toxins. Suitable toxins and their corresponding fragments include diphtheria A chain, exotoxin A chain, ricin A chain, abrin A chain, curcin, croton, phenomycin, enomycin and the like. Cytotoxic agents also include radiochemicals made by conjugating radioisotopes to antibodies raised against CRC proteins, or binding of a radionuclide to a chelating agent that has been covalently attached to the antibody. Targeting the therapeutic moiety to transmembrane CRC proteins not only serves to increase the local concentration of therapeutic moiety in the CRC afflicted area, but also serves to reduce deleterious side effects that may be associated with the therapeutic moiety.

In another preferred embodiment, the CRC protein against which the antibodies are raised is an intracellular protein. In this case, the antibody may be conjugated to a protein which facilitates entry into the cell. In one case, the antibody enters the cell by endocytosis. In another embodiment, a nucleic acid encoding the antibody is administered to the individual or cell. Moreover, wherein the CRC protein can be targeted within a cell, i.e., the nucleus, an antibody thereto contains a signal for that target localization, i.e., a nuclear localization signal.

The CRC antibodies of the invention specifically bind to CRC proteins. By "specifically bind" herein is meant that the antibodies bind to the protein with a binding constant in the range of at least  $10^{-4}$  -  $10^{-6}$   $M^{-1}$ , with a preferred range being  $10^{-7}$  -  $10^{-9}$   $M^{-1}$ .

In a preferred embodiment, the CRC protein is purified or isolated after expression. CRC proteins may be isolated or purified in a variety of ways known to those skilled in the art depending on what other components are present in the sample. Standard purification methods include electrophoretic, molecular, immunological and chromatographic techniques, including ion exchange, hydrophobic, affinity, and reverse-phase HPLC chromatography, and chromatofocusing. For example, the CRC protein may be purified using a standard anti-CRC antibody column. Ultrafiltration and diafiltration techniques, in conjunction with protein concentration, are also useful. For general guidance in suitable purification techniques, see Scopes, R., Protein Purification, Springer-Verlag, NY (1982). The degree of purification necessary will vary depending on the use of the CRC protein. In some instances no purification will be necessary.

Once expressed and purified if necessary, the CRC proteins and nucleic acids are useful in a number of applications.

In one aspect, the expression levels of genes are determined for different cellular states in the CRC phenotype; that is, the expression levels of genes in normal colon tissue and in CRC tissue (and in some cases, for varying severities of CRC that relate to prognosis, as outlined below) are evaluated to provide expression profiles. An expression profile of a particular cell state or point of development is essentially a "fingerprint" of the state; while two states may have any particular gene similarly expressed, the evaluation of a number of genes simultaneously allows the generation of a gene expression profile that is unique to the state of the cell. By comparing expression profiles of cells in different states, information regarding which genes are important (including both up- and down-regulation of genes) in each of these states is obtained. Then, diagnosis may be done or confirmed: does tissue from a particular patient have the gene expression profile of normal or CRC tissue.

"Differential expression," or grammatical equivalents as used herein, refers to both qualitative as well as quantitative differences in the genes' temporal and/or cellular expression patterns within and among the cells. Thus, a differentially expressed gene can qualitatively have its expression altered, including an activation or inactivation, in, for example, normal versus CRC tissue. That is, genes may be turned on or turned off in a particular state, relative to another state. As is apparent to the skilled artisan, any comparison of two or more states can be made. Such a qualitatively regulated gene will exhibit an expression pattern within a state or cell type which is detectable by standard techniques in one such state or cell type, but is not detectable in both. Alternatively, the determination is quantitative in that expression is increased or decreased; that is, the expression of the gene is either upregulated, resulting in an increased amount of transcript, or downregulated, resulting in a decreased amount of transcript. The degree to which expression differs need only be large enough to quantify via standard

characterization techniques as outlined below, such as by use of Affymetrix GeneChip™ expression arrays, Lockhart, Nature Biotechnology, 14:1675-1680 (1996), hereby expressly incorporated by reference. Other techniques include, but are not limited to, quantitative reverse transcriptase PCR, Northern analysis and RNase protection. As outlined above, preferably the change in expression (i.e. upregulation or downregulation) is at least about 50%, more preferably at least about 100%, more preferably at least about 150%, more preferably, at least about 200%, with from 300 to at least 1000% being especially preferred.

As will be appreciated by those in the art, this may be done by evaluation at either the gene transcript, or the protein level; that is, the amount of gene expression may be monitored using nucleic acid probes to the DNA or RNA equivalent of the gene transcript, and the quantification of gene expression levels, or, alternatively, the final gene product itself (protein) can be monitored, for example through the use of antibodies to the CRC protein and standard immunoassays (ELISAs, etc.) or other techniques, including mass spectroscopy assays, 2D gel electrophoresis assays, etc. Thus, the proteins corresponding to CRC genes, i.e. those identified as being important in a CRC phenotype, can be evaluated in a CRC diagnostic test.

In a preferred embodiment, gene expression monitoring is done and a number of genes, i.e. an expression profile, is monitored simultaneously, although multiple protein expression monitoring can be done as well. Similarly, these assays may be done on an individual basis as well.

In this embodiment, the CRC nucleic acid probes are attached to biochips as outlined herein for the detection and quantification of CRC sequences in a particular cell. The assays are further described below in the example.

In a preferred embodiment nucleic acids encoding the CRC protein are detected. Although DNA or RNA encoding the CRC protein may be detected, of particular interest are methods wherein the mRNA encoding a CRC protein is detected. The presence of mRNA in a sample is an indication that the CRC gene has been transcribed to form the mRNA, and suggests that the protein is expressed. Probes to detect the mRNA can be any nucleotide/deoxynucleotide probe that is complementary to and base pairs with the mRNA and includes but is not limited to oligonucleotides, cDNA or RNA. Probes also should contain a detectable label, as defined herein. In one method the mRNA is detected after immobilizing the nucleic acid to be examined on a solid support such as nylon membranes and hybridizing the probe with the sample. Following washing to remove the non-specifically bound probe, the label is detected. In another method detection of the mRNA is performed in situ. In this method permeabilized cells or tissue samples are contacted with a detectably labeled

nucleic acid probe for sufficient time to allow the probe to hybridize with the target mRNA. Following washing to remove the non-specifically bound probe, the label is detected. For example a digoxigenin labeled riboprobe (RNA probe) that is complementary to the mRNA encoding a CRC protein is detected by binding the digoxigenin with an anti-digoxigenin secondary antibody and developed with nitro blue tetrazolium and 5-bromo-4-chloro-3-indoyl phosphate.

In a preferred embodiment, any of the three classes of proteins as described herein (secreted, transmembrane or intracellular proteins) are used in diagnostic assays. The CRC proteins, antibodies, nucleic acids, modified proteins and cells containing CRC sequences are used in diagnostic assays. This can be done on an individual gene or corresponding polypeptide level. In a preferred embodiment, the expression profiles are used, preferably in conjunction with high throughput screening techniques to allow monitoring for expression profile genes and/or corresponding polypeptides.

As described and defined herein, CRC proteins, including intracellular, transmembrane or secreted proteins, find use as markers of CRC. Detection of these proteins in putative CRC tissue or patients allows for a determination or diagnosis of CRC. Numerous methods known to those of ordinary skill in the art find use in detecting CRC. In one embodiment, antibodies are used to detect CRC proteins. A preferred method separates proteins from a sample or patient by electrophoresis on a gel (typically a denaturing and reducing protein gel, but may be any other type of gel including isoelectric focusing gels and the like). Following separation of proteins, the CRC protein is detected by immunoblotting with antibodies raised against the CRC protein. Methods of immunoblotting are well known to those of ordinary skill in the art.

In another preferred method, antibodies to the CRC protein find use in in situ imaging techniques. In this method cells are contacted with from one to many antibodies to the CRC protein(s). Following washing to remove non-specific antibody binding, the presence of the antibody or antibodies is detected. In one embodiment the antibody is detected by incubating with a secondary antibody that contains a detectable label. In another method the primary antibody to the CRC protein(s) contains a detectable label. In another preferred embodiment each one of multiple primary antibodies contains a distinct and detectable label. This method finds particular use in simultaneous screening for a plurality of CRC proteins. As will be appreciated by one of ordinary skill in the art, numerous other histological imaging techniques are useful in the invention.

In a preferred embodiment the label is detected in a fluorometer which has the ability to detect and distinguish emissions of different wavelengths. In addition, a fluorescence activated cell sorter (FACS) can be used in the method.

5 In another preferred embodiment, antibodies find use in diagnosing CRC from blood samples. As previously described, certain CRC proteins are secreted/circulating molecules. Blood samples, therefore, are useful as samples to be probed or tested for the presence of secreted CRC proteins. Antibodies can be used to detect the CRC by any of the previously described immunoassay techniques including ELISA, immunoblotting (Western blotting), immunoprecipitation, BIACORE technology and the like, as will be appreciated by one of ordinary skill in the art.

10 In a preferred embodiment, in situ hybridization of labeled CRC nucleic acid probes to tissue arrays is done. For example, arrays of tissue samples, including CRC tissue and/or normal tissue, are made. In situ hybridization as is known in the art can then be done.

15 It is understood that when comparing the fingerprints between an individual and a standard, the skilled artisan can make a diagnosis as well as a prognosis. It is further understood that the genes which indicate the diagnosis may differ from those which indicate the prognosis.

20 In a preferred embodiment, the CRC proteins, antibodies, nucleic acids, modified proteins and cells containing CRC sequences are used in prognosis assays. As above, gene expression profiles can be generated that correlate to CRC severity, in terms of long term prognosis. Again, this may be done on either a protein or gene level, with the use of genes being preferred. As above, the CRC probes are attached to biochips for the detection and quantification of CRC sequences in a tissue or patient. The assays proceed as outlined for diagnosis.

25 In a preferred embodiment, any of the three classes of proteins as described herein are used in drug screening assays. The CRC proteins, antibodies, nucleic acids, modified proteins and cells containing CRC sequences are used in drug screening assays or by evaluating the effect of drug candidates on a "gene expression profile" or expression profile of polypeptides. In a preferred embodiment, the expression profiles are used, preferably in conjunction with high throughput screening techniques to allow monitoring for expression profile genes after treatment with a candidate agent, Zlokarnik, et al., Science 279, 84-8 (1998), Heid, 1996 #69.

30 In a preferred embodiment, the CRC proteins, antibodies, nucleic acids, modified proteins and cells containing the native or modified CRC proteins are used in screening assays. That is, the present

invention provides novel methods for screening for compositions which modulate the CRC phenotype. As above, this can be done on an individual gene level or by evaluating the effect of drug candidates on a "gene expression profile". In a preferred embodiment, the expression profiles are used, preferably in conjunction with high throughput screening techniques to allow monitoring for expression profile genes after treatment with a candidate agent, see Zlokarnik, supra.

Having identified the differentially expressed genes herein, a variety of assays may be executed. In a preferred embodiment, assays may be run on an individual gene or protein level. That is, having identified a particular gene as up regulated in CRC, candidate bioactive agents may be screened to modulate this gene's response; preferably to down regulate the gene, although in some circumstances to up regulate the gene. "Modulation" thus includes both an increase and a decrease in gene expression. The preferred amount of modulation will depend on the original change of the gene expression in normal versus tumor tissue, with changes of at least 10%, preferably 50%, more preferably 100-300%, and in some embodiments 300-1000% or greater. Thus, if a gene exhibits a 4 fold increase in tumor compared to normal tissue, a decrease of about four fold is desired; a 10 fold decrease in tumor compared to normal tissue gives a 10 fold increase in expression for a candidate agent is desired.

As will be appreciated by those in the art, this may be done by evaluation at either the gene or the protein level; that is, the amount of gene expression may be monitored using nucleic acid probes and the quantification of gene expression levels, or, alternatively, the gene product itself can be monitored, for example through the use of antibodies to the CRC protein and standard immunoassays.

In a preferred embodiment, gene expression monitoring is done and a number of genes, i.e. an expression profile, is monitored simultaneously, although multiple protein expression monitoring can be done as well.

In this embodiment, the CRC nucleic acid probes are attached to biochips as outlined herein for the detection and quantification of CRC sequences in a particular cell. The assays are further described below.

Generally, in a preferred embodiment, a candidate bioactive agent is added to the cells prior to analysis. Moreover, screens are provided to identify a candidate bioactive agent which modulates colorectal cancer, modulates CRC proteins, binds to a CRC protein, or interferes between the binding of a CRC protein and an antibody.

The term "candidate bioactive agent" or "drug candidate" or grammatical equivalents as used herein describes any molecule, e.g., protein, oligopeptide, small organic molecule, polysaccharide, polynucleotide, etc., to be tested for bioactive agents that are capable of directly or indirectly altering either the CRC phenotype or the expression of a CRC sequence, including both nucleic acid sequences and protein sequences. In preferred embodiments, the bioactive agents modulate the expression profiles, or expression profile nucleic acids or proteins provided herein. In a particularly preferred embodiment, the candidate agent suppresses a CRC phenotype, for example to a normal colon tissue fingerprint. Similarly, the candidate agent preferably suppresses a severe CRC phenotype. Generally a plurality of assay mixtures are run in parallel with different agent concentrations to obtain a differential response to the various concentrations. Typically, one of these concentrations serves as a negative control, i.e., at zero concentration or below the level of detection.

In one aspect, a candidate agent will neutralize the effect of a CRC protein. By "neutralize" is meant that activity of a protein is either inhibited or counter acted against so as to have substantially no effect on a cell.

Candidate agents encompass numerous chemical classes, though typically they are organic molecules, preferably small organic compounds having a molecular weight of more than 100 and less than about 2,500 daltons. Preferred small molecules are less than 2000, or less than 1500 or less than 1000 or less than 500 D. Candidate agents comprise functional groups necessary for structural interaction with proteins, particularly hydrogen bonding, and typically include at least an amine, carbonyl, hydroxyl or carboxyl group, preferably at least two of the functional chemical groups. The candidate agents often comprise cyclical carbon or heterocyclic structures and/or aromatic or polyaromatic structures substituted with one or more of the above functional groups. Candidate agents are also found among biomolecules including peptides, saccharides, fatty acids, steroids, purines, pyrimidines, derivatives, structural analogs or combinations thereof. Particularly preferred are peptides.

Candidate agents are obtained from a wide variety of sources including libraries of synthetic or natural compounds. For example, numerous means are available for random and directed synthesis of a wide variety of organic compounds and biomolecules, including expression of randomized oligonucleotides. Alternatively, libraries of natural compounds in the form of bacterial, fungal, plant and animal extracts are available or readily produced. Additionally, natural or synthetically produced libraries and compounds are readily modified through conventional chemical, physical and biochemical means. Known pharmacological agents may be subjected to directed or random



chemical modifications, such as acylation, alkylation, esterification, amidification to produce structural analogs.

In a preferred embodiment, the candidate bioactive agents are proteins. By "protein" herein is meant at least two covalently attached amino acids, which includes proteins, polypeptides, oligopeptides and peptides. The protein may be made up of naturally occurring amino acids and peptide bonds, or synthetic peptidomimetic structures. Thus "amino acid", or "peptide residue", as used herein means both naturally occurring and synthetic amino acids. For example, homo-phenylalanine, citrulline and isoleucine are considered amino acids for the purposes of the invention. "Amino acid" also includes imino acid residues such as proline and hydroxyproline. The side chains may be in either the (R) or the (S) configuration. In the preferred embodiment, the amino acids are in the (S) or L-configuration. If non-naturally occurring side chains are used, non-amino acid substituents may be used, for example to prevent or retard in vivo degradations.

In a preferred embodiment, the candidate bioactive agents are naturally occurring proteins or fragments of naturally occurring proteins. Thus, for example, cellular extracts containing proteins, or random or directed digests of proteinaceous cellular extracts, may be used. In this way libraries of procaryotic and eucaryotic proteins may be made for screening in the methods of the invention. Particularly preferred in this embodiment are libraries of bacterial, fungal, viral, and mammalian proteins, with the latter being preferred, and human proteins being especially preferred.

In a preferred embodiment, the candidate bioactive agents are peptides of from about 5 to about 30 amino acids, with from about 5 to about 20 amino acids being preferred, and from about 7 to about 15 being particularly preferred. The peptides may be digests of naturally occurring proteins as is outlined above, random peptides, or "biased" random peptides. By "randomized" or grammatical equivalents herein is meant that each nucleic acid and peptide consists of essentially random nucleotides and amino acids, respectively. Since generally these random peptides (or nucleic acids, discussed below) are chemically synthesized, they may incorporate any nucleotide or amino acid at any position. The synthetic process can be designed to generate randomized proteins or nucleic acids, to allow the formation of all or most of the possible combinations over the length of the sequence, thus forming a library of randomized candidate bioactive proteinaceous agents.

In one embodiment, the library is fully randomized, with no sequence preferences or constants at any position. In a preferred embodiment, the library is biased. That is, some positions within the sequence are either held constant, or are selected from a limited number of possibilities. For example, in a preferred embodiment, the nucleotides or amino acid residues are randomized within a

defined class, for example, of hydrophobic amino acids, hydrophilic residues, sterically biased (either small or large) residues, towards the creation of nucleic acid binding domains, the creation of cysteines, for cross-linking, prolines for SH-3 domains, serines, threonines, tyrosines or histidines for phosphorylation sites, etc., or to purines, etc.

5 In a preferred embodiment, the candidate bioactive agents are nucleic acids, as defined above.

As described above generally for proteins, nucleic acid candidate bioactive agents may be naturally occurring nucleic acids, random nucleic acids, or "biased" random nucleic acids. For example, digests of procaryotic or eucaryotic genomes may be used as is outlined above for proteins.

10 In a preferred embodiment, the candidate bioactive agents are organic chemical moieties, a wide variety of which are available in the literature.

After the candidate agent has been added and the cells allowed to incubate for some period of time, the sample containing the target sequences to be analyzed is added to the biochip. If required, the target sequence is prepared using known techniques. For example, the sample may be treated to lyse the cells, using known lysis buffers, electroporation, etc., with purification and/or amplification  
15 such as PCR occurring as needed, as will be appreciated by those in the art. For example, an in vitro transcription with labels covalently attached to the nucleosides is done. Generally, the nucleic acids are labeled with biotin-FITC or PE, or with cy3 or cy5.

In a preferred embodiment, the target sequence is labeled with, for example, a fluorescent, a chemiluminescent, a chemical, or a radioactive signal, to provide a means of detecting the target  
20 sequence's specific binding to a probe. The label also can be an enzyme, such as, alkaline phosphatase or horseradish peroxidase, which when provided with an appropriate substrate produces a product that can be detected. Alternatively, the label can be a labeled compound or small molecule, such as an enzyme inhibitor, that binds but is not catalyzed or altered by the enzyme. The label also can be a moiety or compound, such as, an epitope tag or biotin which specifically binds to streptavidin.  
25 For the example of biotin, the streptavidin is labeled as described above, thereby, providing a detectable signal for the bound target sequence. As known in the art, unbound labeled streptavidin is removed prior to analysis.

As will be appreciated by those in the art, these assays can be direct hybridization assays or can comprise "sandwich assays", which include the use of multiple probes, as is generally outlined in U.S.  
30 Patent Nos. 5,681,702, 5,597,909, 5,545,730, 5,594,117, 5,591,584, 5,571,670, 5,580,731, 5,571,670,

5,591,584, 5,624,802, 5,635,352, 5,594,118, 5,359,100, 5,124,246 and 5,681,697, all of which are hereby incorporated by reference. In this embodiment, in general, the target nucleic acid is prepared as outlined above, and then added to the biochip comprising a plurality of nucleic acid probes, under conditions that allow the formation of a hybridization complex.

5 A variety of hybridization conditions may be used in the present invention, including high, moderate and low stringency conditions as outlined above. The assays are generally run under stringency conditions which allows formation of the label probe hybridization complex only in the presence of target. Stringency can be controlled by altering a step parameter that is a thermodynamic variable, including, but not limited to, temperature, formamide concentration, salt concentration, chaotropic salt  
10 concentration pH, organic solvent concentration, etc.

These parameters may also be used to control non-specific binding, as is generally outlined in U.S. Patent No. 5,681,697. Thus it may be desirable to perform certain steps at higher stringency conditions to reduce non-specific binding.

15 The reactions outlined herein may be accomplished in a variety of ways, as will be appreciated by those in the art. Components of the reaction may be added simultaneously, or sequentially, in any order, with preferred embodiments outlined below. In addition, the reaction may include a variety of other reagents may be included in the assays. These include reagents like salts, buffers, neutral proteins, e.g. albumin, detergents, etc which may be used to facilitate optimal hybridization and detection, and/or reduce non-specific or background interactions. Also reagents that otherwise  
20 improve the efficiency of the assay, such as protease inhibitors, nuclease inhibitors, anti-microbial agents, etc., may be used, depending on the sample preparation methods and purity of the target.

Once the assay is run, the data is analyzed to determine the expression levels, and changes in expression levels as between states, of individual genes, forming a gene expression profile.

25 The screens are done to identify drugs or bioactive agents that modulate the CRC phenotype. Specifically, there are several types of screens that can be run. A preferred embodiment is in the screening of candidate agents that can induce or suppress a particular expression profile, thus preferably generating the associated phenotype. That is, candidate agents that can mimic or produce an expression profile in CRC similar to the expression profile of normal colon tissue is expected to result in a suppression of the CRC phenotype. Thus, in this embodiment, mimicking an expression  
30 profile, or changing one profile to another, is the goal.

In a preferred embodiment, as for the diagnosis and prognosis applications, having identified the differentially expressed genes important in any one state, screens can be run to alter the expression of the genes individually. That is, screening for modulation of regulation of expression of a single gene can be done; that is, rather than try to mimic all or part of an expression profile, screening for regulation of individual genes can be done. Thus, for example, particularly in the case of target genes whose presence or absence is unique between two states, screening is done for modulators of the target gene expression.

In a preferred embodiment, screening is done to alter the biological function of the expression product of the differentially expressed gene. Again, having identified the importance of a gene in a particular state, screening for agents that bind and/or modulate the biological activity of the gene product can be run as is more fully outlined below.

Thus, screening of candidate agents that modulate the CRC phenotype either at the gene expression level or the protein level can be done.

In addition screens can be done for novel genes that are induced in response to a candidate agent. After identifying a candidate agent based upon its ability to suppress a CRC expression pattern leading to a normal expression pattern, or modulate a single CRC gene expression profile so as to mimic the expression of the gene from normal tissue, a screen as described above can be performed to identify genes that are specifically modulated in response to the agent. Comparing expression profiles between normal tissue and agent treated CRC tissue reveals genes that are not expressed in normal tissue or CRC tissue, but are expressed in agent treated tissue. These agent specific sequences can be identified and used by any of the methods described herein for CRC genes or proteins. In particular these sequences and the proteins they encode find use in marking or identifying agent treated cells. In addition, antibodies can be raised against the agent induced proteins and used to target novel therapeutics to the treated CRC tissue sample.

Thus, in one embodiment, a candidate agent is administered to a population of CRC cells, that thus has an associated CRC expression profile. By "administration" or "contacting" herein is meant that the candidate agent is added to the cells in such a manner as to allow the agent to act upon the cell, whether by uptake and intracellular action, or by action at the cell surface. In some embodiments, nucleic acid encoding a proteinaceous candidate agent (i.e. a peptide) may be put into a viral construct such as a retroviral construct and added to the cell, such that expression of the peptide agent is accomplished; see PCT US97/01019, hereby expressly incorporated by reference.

Once the candidate agent has been administered to the cells, the cells can be washed if desired and are allowed to incubate under preferably physiological conditions for some period of time. The cells are then harvested and a new gene expression profile is generated, as outlined herein.

Thus, for example, CRC tissue may be screened for agents that reduce or suppress the CRC phenotype. A change in at least one gene of the expression profile indicates that the agent has an effect on CRC activity. By defining such a signature for the CRC phenotype, screens for new drugs that alter the phenotype can be devised. With this approach, the drug target need not be known and need not be represented in the original expression screening platform, nor does the level of transcript for the target protein need to change.

In a preferred embodiment, as outlined above, screens may be done on individual genes and gene products (proteins). That is, having identified a particular differentially expressed gene as important in a particular state, screening of modulators of either the expression of the gene or the gene product itself can be done. The gene products of differentially expressed genes are sometimes referred to herein as "CRC proteins" or a "CCMP". In preferred embodiments, the CCMP is as depicted in Figures 17-20, 24, 25, 29, 33 and 36, more preferably the protein having the sequence shown in Figures 29 or 36 or encoded by the sequences of Figures 27, 36 and 39-48. The CCMP may be a fragment, or alternatively, be the full length protein to a fragment shown herein. Preferably, the CCMP is a fragment of approximately 14 to 24 amino acids long. More preferably the fragment is a soluble fragment.

In a preferred embodiment, the fragment is from CAA9. Preferably, the fragment includes a non-transmembrane region. In a preferred embodiment, the CAA9 fragment has an N-terminal Cys to aid in solubility. Preferably, the fragment is selected from CAA9p1, Caa9p2, CAA9p3, CAA9p4, CAA9p4MAPS, CAA9p5 and CAA9p5MAPS.

In a preferred embodiment, the fragment is charged and from the c-terminus of CAA2. In one embodiment, the c-terminus of the fragment is kept as a free acid and the n-terminus is a free amine to aid in coupling, i.e., to cysteine. In another embodiment, the fragment is an internal peptide overlapping hydrophilic stretch of CAA2. In a preferred embodiment, the termini is blocked. Preferably, the fragment of CAA2 is selected from CAA2p1 or CAA2p2. In another preferred embodiment, the fragment is a novel fragment from the N-terminal. In one embodiment, the fragment excludes sequence outside of the N-terminal, in another embodiment, the fragment includes at least a portion of the N-terminal. "N-terminal" is used interchangeably herein with "N-terminus" which is further described above.

In one embodiment the CRC proteins are conjugated to an immunogenic agent as discussed herein.  
In one embodiment the CRC protein is conjugated to BSA.

Thus, in a preferred embodiment, screening for modulators of expression of specific genes can be done. This will be done as outlined above, but in general the expression of only one or a few genes are evaluated.

In a preferred embodiment, screens are designed to first find candidate agents that can bind to differentially expressed proteins, and then these agents may be used in assays that evaluate the ability of the candidate agent to modulate differentially expressed activity. Thus, as will be appreciated by those in the art, there are a number of different assays which may be run; binding assays and activity assays.

In a preferred embodiment, binding assays are done. In general, purified or isolated gene product is used; that is, the gene products of one or more differentially expressed nucleic acids are made. In general, this is done as is known in the art. For example, antibodies are generated to the protein gene products, and standard immunoassays are run to determine the amount of protein present. Alternatively, cells comprising the CRC proteins can be used in the assays.

Thus, in a preferred embodiment, the methods comprise combining a CRC protein and a candidate bioactive agent, and determining the binding of the candidate agent to the CRC protein. Preferred embodiments utilize the human CRC protein, although other mammalian proteins may also be used, for example for the development of animal models of human disease. In some embodiments, as outlined herein, variant or derivative CRC proteins may be used.

Generally, in a preferred embodiment of the methods herein, the CRC protein or the candidate agent is non-diffusably bound to an insoluble support having isolated sample receiving areas (e.g. a microtiter plate, an array, etc.). The insoluble supports may be made of any composition to which the compositions can be bound, is readily separated from soluble material, and is otherwise compatible with the overall method of screening. The surface of such supports may be solid or porous and of any convenient shape. Examples of suitable insoluble supports include microtiter plates, arrays, membranes and beads. These are typically made of glass, plastic (e.g., polystyrene), polysaccharides, nylon or nitrocellulose, teflon™, etc. Microtiter plates and arrays are especially convenient because a large number of assays can be carried out simultaneously, using small amounts of reagents and samples. The particular manner of binding of the composition is not crucial so long as it is compatible with the reagents and overall methods of the invention, maintains the activity of the

composition and is nondiffusable. Preferred methods of binding include the use of antibodies (which do not sterically block either the ligand binding site or activation sequence when the protein is bound to the support), direct binding to "sticky" or ionic supports, chemical crosslinking, the synthesis of the protein or agent on the surface, etc. Following binding of the protein or agent, excess unbound material is removed by washing. The sample receiving areas may then be blocked through incubation with bovine serum albumin (BSA), casein or other innocuous protein or other moiety.

In a preferred embodiment, the CRC protein is bound to the support, and a candidate bioactive agent is added to the assay. Alternatively, the candidate agent is bound to the support and the CRC protein is added. Novel binding agents include specific antibodies, non-natural binding agents identified in screens of chemical libraries, peptide analogs, etc. Of particular interest are screening assays for agents that have a low toxicity for human cells. A wide variety of assays may be used for this purpose, including labeled in vitro protein-protein binding assays, electrophoretic mobility shift assays, immunoassays for protein binding, functional assays (phosphorylation assays, etc.) and the like.

The determination of the binding of the candidate bioactive agent to the CRC protein may be done in a number of ways. In a preferred embodiment, the candidate bioactive agent is labeled, and binding determined directly. For example, this may be done by attaching all or a portion of the CRC protein to a solid support, adding a labeled candidate agent (for example a fluorescent label), washing off excess reagent, and determining whether the label is present on the solid support. Various blocking and washing steps may be utilized as is known in the art.

By "labeled" herein is meant that the compound is either directly or indirectly labeled with a label which provides a detectable signal, e.g. radioisotope, fluorescers, enzyme, antibodies, particles such as magnetic particles, chemiluminescers, or specific binding molecules, etc. Specific binding molecules include pairs, such as biotin and streptavidin, digoxin and antidigoxin etc. For the specific binding members, the complementary member would normally be labeled with a molecule which provides for detection, in accordance with known procedures, as outlined above. The label can directly or indirectly provide a detectable signal.

In some embodiments, only one of the components is labeled. For example, the proteins (or proteinaceous candidate agents) may be labeled at tyrosine positions using  $^{125}\text{I}$ , or with fluorophores. Alternatively, more than one component may be labeled with different labels; using  $^{125}\text{I}$  for the proteins, for example, and a fluorophor for the candidate agents.

In a preferred embodiment, the binding of the candidate bioactive agent is determined through the use of competitive binding assays. In this embodiment, the competitor is a binding moiety known to bind to the target molecule (i.e. CRC), such as an antibody, peptide, binding partner, ligand, etc. Under certain circumstances, there may be competitive binding as between the bioactive agent and the binding moiety, with the binding moiety displacing the bioactive agent.

In one embodiment, the candidate bioactive agent is labeled. Either the candidate bioactive agent, or the competitor, or both, is added first to the protein for a time sufficient to allow binding, if present. Incubations may be performed at any temperature which facilitates optimal activity, typically between 4 and 40°C. Incubation periods are selected for optimum activity, but may also be optimized to facilitate rapid high through put screening. Typically between 0.1 and 1 hour will be sufficient. Excess reagent is generally removed or washed away. The second component is then added, and the presence or absence of the labeled component is followed, to indicate binding.

In a preferred embodiment, the competitor is added first, followed by the candidate bioactive agent. Displacement of the competitor is an indication that the candidate bioactive agent is binding to the CRC protein and thus is capable of binding to, and potentially modulating, the activity of the CRC protein. In this embodiment, either component can be labeled. Thus, for example, if the competitor is labeled, the presence of label in the wash solution indicates displacement by the agent. Alternatively, if the candidate bioactive agent is labeled, the presence of the label on the support indicates displacement.

In an alternative embodiment, the candidate bioactive agent is added first, with incubation and washing, followed by the competitor. The absence of binding by the competitor may indicate that the bioactive agent is bound to the CRC protein with a higher affinity. Thus, if the candidate bioactive agent is labeled, the presence of the label on the support, coupled with a lack of competitor binding, may indicate that the candidate agent is capable of binding to the CRC protein.

In a preferred embodiment, the methods comprise differential screening to identify bioactive agents that are capable of modulating the activity of the CRC proteins. In this embodiment, the methods comprise combining a CRC protein and a competitor in a first sample. A second sample comprises a candidate bioactive agent, a CRC protein and a competitor. The binding of the competitor is determined for both samples, and a change, or difference in binding between the two samples indicates the presence of an agent capable of binding to the CRC protein and potentially modulating its activity. That is, if the binding of the competitor is different in the second sample relative to the first sample, the agent is capable of binding to the CRC protein.



Alternatively, a preferred embodiment utilizes differential screening to identify drug candidates that bind to the native CRC protein, but cannot bind to modified CRC proteins. The structure of the CRC protein may be modeled, and used in rational drug design to synthesize agents that interact with that site. Drug candidates that affect CRC bioactivity are also identified by screening drugs for the ability to either enhance or reduce the activity of the protein.

Positive controls and negative controls may be used in the assays. Preferably all control and test samples are performed in at least triplicate to obtain statistically significant results. Incubation of all samples is for a time sufficient for the binding of the agent to the protein. Following incubation, all samples are washed free of non-specifically bound material and the amount of bound, generally labeled agent determined. For example, where a radiolabel is employed, the samples may be counted in a scintillation counter to determine the amount of bound compound.

A variety of other reagents may be included in the screening assays. These include reagents like salts, neutral proteins, e.g. albumin, detergents, etc which may be used to facilitate optimal protein-protein binding and/or reduce non-specific or background interactions. Also reagents that otherwise improve the efficiency of the assay, such as protease inhibitors, nuclease inhibitors, anti-microbial agents, etc., may be used. The mixture of components may be added in any order that provides for the requisite binding.

Screening for agents that modulate the activity of CRC proteins may also be done. In a preferred embodiment, methods for screening for a bioactive agent capable of modulating the activity of CRC proteins comprise the steps of adding a candidate bioactive agent to a sample of CRC proteins, as above, and determining an alteration in the biological activity of CRC proteins. "Modulating the activity of CRC" includes an increase in activity, a decrease in activity, or a change in the type or kind of activity present. Thus, in this embodiment, the candidate agent should both bind to CRC proteins (although this may not be necessary), and alter its biological or biochemical activity as defined herein.

The methods include both in vitro screening methods, as are generally outlined above, and in vivo screening of cells for alterations in the presence, distribution, activity or amount of CRC proteins.

Thus, in this embodiment, the methods comprise combining a CRC sample and a candidate bioactive agent, and evaluating the effect on CRC activity. By "CRC activity" or grammatical equivalents herein is meant one of the CRC's biological activities, including, but not limited to, cell division, preferably in colon tissue, cell proliferation, tumor growth, transformation of cells. In one embodiment, CRC activity includes activation of CZA8, BCX2, CBC2, CBC1, CBC3, CJA9, BCN5, CQA1, BCN7, CQA2, CJA8,

CAA2, CAA9, CGA7 and/or CGA8<sup>+</sup>, preferably one of the CRC proteins listed in Figure 14. An inhibitor of CRC activity is the inhibition of any one or more CRC activities.

5 In a preferred embodiment, the activity of the CRC protein is increased; in another preferred embodiment, the activity of the CRC protein is decreased. Thus, bioactive agents that are antagonists are preferred in some embodiments, and bioactive agents that are agonists may be preferred in other embodiments.

10 In a preferred embodiment, the invention provides methods for screening for bioactive agents capable of modulating the activity of a CRC protein. The methods comprise adding a candidate bioactive agent, as defined above, to a cell comprising CRC proteins. Preferred cell types include almost any cell. The cells contain a recombinant nucleic acid that encodes a CRC protein. In a preferred embodiment, a library of candidate agents are tested on a plurality of cells.

15 In one aspect, the assays are evaluated in the presence or absence or previous or subsequent exposure of physiological signals, for example hormones, antibodies, peptides, antigens, cytokines, growth factors, action potentials, pharmacological agents including chemotherapeutics, radiation, carcinogenics, or other cells (i.e. cell-cell contacts). In another example, the determinations are determined at different stages of the cell cycle process.

20 In this way, bioactive agents are identified. Compounds with pharmacological activity are able to enhance or interfere with the activity of the CRC protein. In one embodiment, "colorectal cancer protein activity" as used herein includes at least one of the following: colorectal cancer activity, binding to CJA8, activation of CJA8 or activation of substrates of CJA8 by CJA8. In one embodiment, colorectal cancer activity is defined as the unregulated proliferation of colon tissue, or the growth of cancer in colon tissue. In one aspect, colorectal cancer activity as defined herein is related to the activity of CJA8 in the upregulation of CJA8 in colon cancer tissue.

25 In another embodiment, colorectal cancer protein activity includes at least one of the following: colorectal cancer activity, binding to one of CAA2, CAA9, CGA7 and CGA8, activation of one of CAA2, CAA9, CGA7, and CGA8 or activation of substrates of CAA2, CAA9, CGA7 or CGA8 by CAA2, CAA9, CGA7 or CGA8, respectively. In one preferred embodiment, CAA2 comprises its N-terminal end. In one aspect, colorectal cancer activity as defined herein is related to the activity of CAA2, CAA9, CGA7 and/or CGA8 in the upregulation of CAA2, CAA9, CGA7 and/or CGA8, respectively, in  
30 colon cancer tissue.

In one embodiment, a method of inhibiting colon cancer cell division is provided. The method comprises administration of a colorectal cancer inhibitor.

In another embodiment, a method of inhibiting tumor growth is provided. The method comprises administration of a colorectal cancer inhibitor.

- 5 In a further embodiment, methods of treating cells or individuals with cancer are provided. The method comprises administration of a colorectal cancer inhibitor.

10 In one embodiment, a colorectal cancer inhibitor is an antibody as discussed above. In another embodiment, the colorectal cancer inhibitor is an antisense molecule. Antisense molecules as used herein include antisense or sense oligonucleotides comprising a single-stranded nucleic acid sequence (either RNA or DNA) capable of binding to target mRNA (sense) or DNA (antisense) sequences for colorectal cancer molecules. A preferred antisense molecule is for CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, BCN5, CQA1, BCN7, CQA2, CAA2, CAA9, CGA7 or CGA8, more preferably for the CRC sequences referenced in Figure 14, or for a ligand or activator thereof. A most preferred antisense molecule is for CJA8 or for a ligand or activator thereof. Antisense or sense  
15 oligonucleotides, according to the present invention, comprise a fragment generally at least about 14 nucleotides, preferably from about 14 to 30 nucleotides. The ability to derive an antisense or a sense oligonucleotide, based upon a cDNA sequence encoding a given protein is described in, for example, Stein and Cohen (Cancer Res. 48:2659, 1988) and van der Krol et al. (BioTechniques 6:958, 1988).

20 Antisense molecules may be introduced into a cell containing the target nucleotide sequence by formation of a conjugate with a ligand binding molecule, as described in WO 91/04753. Suitable ligand binding molecules include, but are not limited to, cell surface receptors, growth factors, other cytokines, or other ligands that bind to cell surface receptors. Preferably, conjugation of the ligand binding molecule does not substantially interfere with the ability of the ligand binding molecule to bind to its corresponding molecule or receptor, or block entry of the sense or antisense oligonucleotide or  
25 its conjugated version into the cell. Alternatively, a sense or an antisense oligonucleotide may be introduced into a cell containing the target nucleic acid sequence by formation of an oligonucleotide-lipid complex, as described in WO 90/10448. It is understood that the use of antisense molecules or knock out and knock in models may also be used in screening assays as discussed above, in addition to methods of treatment.

30 The compounds having the desired pharmacological activity may be administered in a physiologically acceptable carrier to a host, as previously described. The agents may be administered in a variety of

ways, orally, parenterally e.g., subcutaneously, intraperitoneally, intravascularly, etc. Depending upon the manner of introduction, the compounds may be formulated in a variety of ways. The concentration of therapeutically active compound in the formulation may vary from about 0.1-100 wt.%. The agents may be administered alone or in combination with other treatments, i.e., radiation.

- 5 The pharmaceutical compositions can be prepared in various forms, such as granules, tablets, pills, suppositories, capsules, suspensions, salves, lotions and the like. Pharmaceutical grade organic or inorganic carriers and/or diluents suitable for oral and topical use can be used to make up compositions containing the therapeutically-active compounds. Diluents known to the art include aqueous media, vegetable and animal oils and fats. Stabilizing agents, wetting and emulsifying  
10 agents, salts for varying the osmotic pressure or buffers for securing an adequate pH value, and skin penetration enhancers can be used as auxiliary agents.

- Without being bound by theory, it appears that the various CRC sequences are important in CRC. Accordingly, disorders based on mutant or variant CRC genes may be determined. In one embodiment, the invention provides methods for identifying cells containing variant CRC genes  
15 comprising determining all or part of the sequence of at least one endogeneous CRC genes in a cell. As will be appreciated by those in the art, this may be done using any number of sequencing techniques. In a preferred embodiment, the invention provides methods of identifying the CRC genotype of an individual comprising determining all or part of the sequence of at least one CRC gene of the individual. This is generally done in at least one tissue of the individual, and may include the  
20 evaluation of a number of tissues or different samples of the same tissue. The method may include comparing the sequence of the sequenced CRC gene to a known CRC gene, i.e. a wild-type gene.

- The sequence of all or part of the CRC gene can then be compared to the sequence of a known CRC gene to determine if any differences exist. This can be done using any number of known homology programs, such as Bestfit, etc. In a preferred embodiment, the presence of a difference in the  
25 sequence between the CRC gene of the patient and the known CRC gene is indicative of a disease state or a propensity for a disease state, as outlined herein.

In a preferred embodiment, the CRC genes are used as probes to determine the number of copies of the CRC gene in the genome.

- 30 In another preferred embodiment CRC genes are used as probed to determine the chromosomal localization of the CRC genes. Information such as chromosomal localization finds use in providing a

diagnosis or prognosis in particular when chromosomal abnormalities such as translocations, and the like are identified in CRC gene loci.

Thus, in one embodiment, methods of modulating CRC in cells or organisms are provided. In one embodiment, the methods comprise administering to a cell an anti-CRC antibody that reduces or eliminates the biological activity of an endogeneous CRC protein. Alternatively, the methods comprise administering to a cell or organism a recombinant nucleic acid encoding a CRC protein. As will be appreciated by those in the art, this may be accomplished in any number of ways. In a preferred embodiment, for example when the CRC sequence is down-regulated in CRC, the activity of the CRC gene is increased by increasing the amount of CRC in the cell, for example by overexpressing the endogeneous CRC or by administering a gene encoding the CRC sequence, using known gene-therapy techniques, for example. In a preferred embodiment, the gene therapy techniques include the incorporation of the endogenous gene using enhanced homologous recombination (EHR), for example as described in PCT/US93/03868, hereby incorporated by reference in its entirety. Alternatively, for example when the CRC sequence is up-regulated in CRC, the activity of the endogeneous CRC gene is decreased, for example by the administration of a CRC antisense nucleic acid.

In one embodiment, the CRC proteins of the present invention may be used to generate polyclonal and monoclonal antibodies to CRC proteins, which are useful as described herein. Similarly, the CRC proteins can be coupled, using standard technology, to affinity chromatography columns. These columns may then be used to purify CRC antibodies. In a preferred embodiment, the antibodies are generated to epitopes unique to a CRC protein; that is, the antibodies show little or no cross-reactivity to other proteins. These antibodies find use in a number of applications. For example, the CRC antibodies may be coupled to standard affinity chromatography columns and used to purify CRC proteins. The antibodies may also be used as blocking polypeptides, as outlined above, since they will specifically bind to the CRC protein.

In one embodiment, a therapeutically effective dose of a CRC or modulator thereof is administered to a patient. By "therapeutically effective dose" herein is meant a dose that produces the effects for which it is administered. The exact dose will depend on the purpose of the treatment, and will be ascertainable by one skilled in the art using known techniques. As is known in the art, adjustments for CRC degradation, systemic versus localized delivery, and rate of new protease synthesis, as well as the age, body weight, general health, sex, diet, time of administration, drug interaction and the severity of the condition may be necessary, and will be ascertainable with routine experimentation by those skilled in the art.

A "patient" for the purposes of the present invention includes both humans and other animals, particularly mammals, and organisms. Thus the methods are applicable to both human therapy and veterinary applications. In the preferred embodiment the patient is a mammal, and in the most preferred embodiment the patient is human.

5 The administration of the CRC proteins and modulators of the present invention can be done in a variety of ways as discussed above, including, but not limited to, orally, subcutaneously, intravenously, intranasally, transdermally, intraperitoneally, intramuscularly, intrapulmonary, vaginally, rectally, or intraocularly. In some instances, for example, in the treatment of wounds and inflammation, the CRC proteins and modulators may be directly applied as a solution or spray.

10 The pharmaceutical compositions of the present invention comprise a CRC protein in a form suitable for administration to a patient. In the preferred embodiment, the pharmaceutical compositions are in a water soluble form, such as being present as pharmaceutically acceptable salts, which is meant to include both acid and base addition salts. "Pharmaceutically acceptable acid addition salt" refers to those salts that retain the biological effectiveness of the free bases and that are not biologically or  
15 otherwise undesirable, formed with inorganic acids such as hydrochloric acid, hydrobromic acid, sulfuric acid, nitric acid, phosphoric acid and the like, and organic acids such as acetic acid, propionic acid, glycolic acid, pyruvic acid, oxalic acid, maleic acid, malonic acid, succinic acid, fumaric acid, tartaric acid, citric acid, benzoic acid, cinnamic acid, mandelic acid, methanesulfonic acid, ethanesulfonic acid, p-toluenesulfonic acid, salicylic acid and the like. "Pharmaceutically acceptable  
20 base addition salts" include those derived from inorganic bases such as sodium, potassium, lithium, ammonium, calcium, magnesium, iron, zinc, copper, manganese, aluminum salts and the like. Particularly preferred are the ammonium, potassium, sodium, calcium, and magnesium salts. Salts derived from pharmaceutically acceptable organic non-toxic bases include salts of primary, secondary, and tertiary amines, substituted amines including naturally occurring substituted amines, cyclic amines  
25 and basic ion exchange resins, such as isopropylamine, trimethylamine, diethylamine, triethylamine, tripropylamine, and ethanolamine.

The pharmaceutical compositions may also include one or more of the following: carrier proteins such as serum albumin; buffers; fillers such as microcrystalline cellulose, lactose, corn and other starches; binding agents; sweeteners and other flavoring agents; coloring agents; and polyethylene glycol.

30 Additives are well known in the art, and are used in a variety of formulations.

In a preferred embodiment, CRC proteins and modulators are administered as therapeutic agents, and can be formulated as outlined above. Similarly, CRC genes (including both the full-length

sequence, partial sequences, or regulatory sequences of the CRC coding regions) can be administered in gene therapy applications, as is known in the art. These CRC genes can include antisense applications, either as gene therapy (i.e. for incorporation into the genome) or as antisense compositions, as will be appreciated by those in the art.

- 5 In a preferred embodiment, CRC genes are administered as DNA vaccines, either single genes or combinations of CRC genes. Naked DNA vaccines are generally known in the art. Brower, Nature Biotechnology, 16:1304-1305 (1998).

10 In one embodiment, CRC genes of the present invention are used as DNA vaccines. Methods for the use of genes as DNA vaccines are well known to one of ordinary skill in the art, and include placing a CRC gene or portion of a CRC gene under the control of a promoter for expression in a CRC patient. The CRC gene used for DNA vaccines can encode full-length CRC proteins, but more preferably encodes portions of the CRC proteins including peptides derived from the CRC protein. In a preferred embodiment a patient is immunized with a DNA vaccine comprising a plurality of nucleotide sequences derived from a CRC gene. Similarly, it is possible to immunize a patient with a plurality of 15 CRC genes or portions thereof as defined herein. Without being bound by theory, expression of the polypeptide encoded by the DNA vaccine, cytotoxic T-cells, helper T-cells and antibodies are induced which recognize and destroy or eliminate cells expressing CRC proteins.

20 In a preferred embodiment, the DNA vaccines include a gene encoding an adjuvant molecule with the DNA vaccine. Such adjuvant molecules include cytokines that increase the immunogenic response to the CRC polypeptide encoded by the DNA vaccine. Additional or alternative adjuvants are known to those of ordinary skill in the art and find use in the invention.

In another preferred embodiment CRC genes find use in generating animal models of CRC. As is appreciated by one of ordinary skill in the art, when the CRC gene identified is repressed or diminished in CRC tissue, gene therapy technology wherein antisense RNA directed to the CRC gene 25 will also diminish or repress expression of the gene. An animal generated as such serves as an animal model of CRC that finds use in screening bioactive drug candidates. Similarly, gene knockout technology, for example as a result of homologous recombination with an appropriate gene targeting vector, will result in the absence of the CRC protein. When desired, tissue-specific expression or knockout of the CRC protein may be necessary.

30 It is also possible that the CRC protein is overexpressed in CRC. As such, transgenic animals can be generated that overexpress the CRC protein. Depending on the desired expression level, promoters

of various strengths can be employed to express the transgene. Also, the number of copies of the integrated transgene can be determined and compared for a determination of the expression level of the transgene. Animals generated by such methods find use as animal models of CRC and are additionally useful in screening for bioactive molecules to treat CRC.

- 5 It is understood that the examples described herein in no way serve to limit the true scope of this invention, but rather are presented for illustrative purposes. All references and sequences of accession numbers cited herein are incorporated by reference in their entirety.

## EXAMPLES

### Example 1

#### 1.0 Tissue Preparation, Labeling Chips, and Fingerprints

##### Purify total RNA from tissue using TRIzol Reagent

- 1.5 Estimate tissue weight. Homogenize tissue samples in 1ml of TRIzol per 50mg of tissue using a Polytron 3100 homogenizer. The generator/probe used depends upon the tissue size. A generator that is too large for the amount of tissue to be homogenized will cause a loss of sample and lower RNA yield. Use the 20mm generator for tissue weighing more than 0.6g. If the working volume is greater than 2ml, then homogenize tissue in a 15ml polypropylene tube (Falcon 2059). Fill tube no greater than 10ml.

##### HOMOGENIZATION

- 2.0 Before using generator, it should have been cleaned after last usage by running it through soapy H<sub>2</sub>O and rinsing thoroughly. Run through with EtOH to sterilize. Keep tissue frozen until ready. Add TRIzol directly to frozen tissue then homogenize.

- 2.5 Following homogenization, remove insoluble material from the homogenate by centrifugation at 7500 x g for 15 min. in a Sorvall superspeed or 12,000 x g for 10 min. in an Eppendorf centrifuge at 4°C. Transfer the cleared homogenate to a new tube(s). The samples may be frozen now at -60 to -70°C (and kept for at least one month) or you may continue with the purification.

##### PHASE SEPARATION

Incubate the homogenized samples for 5 minutes at room temperature.  
Add 0.2ml of chloroform per 1ml of TRIzol reagent used in the original homogenization.  
Cap tubes securely and shake tubes vigorously by hand (do not vortex) for 15 seconds.



Incubate samples at room temp. for 2-3 minutes. Centrifuge samples at 6500rpm in a Sorvall superspeed for 30 min. at 4°C. (You may spin at up to 12,000 x g for 10 min. but you risk breaking your tubes in the centrifuge.)

#### RNA PRECIPITATION

- 5 Transfer the aqueous phase to a fresh tube. Save the organic phase if isolation of DNA or protein is desired. Add 0.5ml of isopropyl alcohol per 1ml of TRIzol reagent used in the original homogenization. Cap tubes securely and invert to mix. Incubate samples at room temp. for 10 minutes. Centrifuge samples at 6500rpm in Sorvall for 20min. at 4°C.

#### RNA WASH

- 10 Pour off the supernate. Wash pellet with cold 75% ethanol. Use 1ml of 75% ethanol per 1ml of TRIzol reagent used in the initial homogenization. Cap tubes securely and invert several times to loosen pellet. (Do not vortex). Centrifuge at <8000rpm (<7500 x g) for 5 minutes at 4°C. Pour off the wash. Carefully transfer pellet to an eppendorf tube (let it slide down the tube into the new tube and use a pipet tip to help guide it in if necessary). Depending on the volumes you are
- 15 working with, you can decide what size tube(s) you want to precipitate the RNA in. When I tried leaving the RNA in the large 15ml tube, it took so long to dry (i.e. it did not dry) that I eventually had to transfer it to a smaller tube. Let pellet dry in hood. Resuspend RNA in an appropriate volume of DEPC H<sub>2</sub>O. Try for 2-5ug/ul. Take absorbance readings.

#### Purify poly A<sup>+</sup> mRNA from total RNA or clean up total RNA with Qiagen's

##### 20 RNeasy kit

- Purification of poly A<sup>+</sup> mRNA from total RNA. Heat oligotex suspension to 37°C and mix immediately before adding to RNA. Incubate Elution Buffer at 70°C. Warm up 2 x Binding Buffer at 65°C if there is precipitate in the buffer. Mix total RNA with DEPC-treated water, 2 x Binding Buffer, and Oligotex according to Table 2 on page 16 of the Oligotex Handbook. Incubate for 3
- 25 minutes at 65°C. Incubate for 10 minutes at room temperature.

Centrifuge for 2 minutes at 14,000 to 18,000 g. If centrifuge has a "soft setting," then use it. Remove supernatant without disturbing Oligotex pellet. A little bit of solution can be left behind to reduce the loss of Oligotex. Save sup until certain that satisfactory binding and elution of poly A<sup>+</sup> mRNA has occurred.

- 30 Gently resuspend in Wash Buffer OW2 and pipet onto spin column. Centrifuge the spin column at full speed (soft setting if possible) for 1 minute.

Transfer spin column to a new collection tube and gently resuspend in Wash Buffer OW2 and centrifuge as describe herein.

Transfer spin column to a new tube and elute with 20 to 100 ul of preheated (70°C) Elution Buffer. Gently resuspend Oligotex resin by pipetting up and down. Centrifuge as above. Repeat elution with fresh elution buffer or use first eluate to keep the elution volume low.

5

Read absorbance, using diluted Elution Buffer as the blank.

Before proceeding with cDNA synthesis, the mRNA must be precipitated. Some component leftover or in the Elution Buffer from the Oligotex purification procedure will inhibit downstream enzymatic reactions of the mRNA.

#### 10 Ethanol Precipitation

Add 0.4 vol. of 7.5 M  $\text{NH}_4\text{OAc}$  + 2.5 vol. of cold 100% ethanol. Precipitate at -20°C 1 hour to overnight (or 20-30 min. at -70°C). Centrifuge at 14,000-16,000 x g for 30 minutes at 4°C. Wash pellet with 0.5ml of 80% ethanol (-20°C) then centrifuge at 14,000-16,000 x g for 5 minutes at room temperature. Repeat 80% ethanol wash. Dry the last bit of ethanol from the pellet in the hood.

15

#### Clean up total RNA using Qiagen's RNeasy kit

Add no more than 100ug to an RNeasy column. Adjust sample to a volume of 100ul with RNase-free water. Add 350ul Buffer RLT then 250ul ethanol (100%) to the sample. Mix by pipetting (do not centrifuge) then apply sample to an RNeasy mini spin column. Centrifuge for 15 sec at >10,000rpm. If concerned about yield, re-apply flowthrough to column and centrifuge again. Transfer column to a new 2-ml collection tube. Add 500ul Buffer RPE and centrifuge for 15 sec at >10,000rpm. Discard flowthrough. Add 500ul Buffer RPE and centrifuge for 15 sec at >10,000rpm. Discard flowthrough then centrifuge for 2 min at maximum speed to dry column membrane. Transfer column to a new 1.5-ml collection tube and apply 30-50ul of RNase-free water directly onto column membrane. Centrifuge 1 min at >10,000rpm. Repeat elution. Take absorbance reading. If necessary, ethanol precipitate with ammonium acetate and 2.5X volume 100% ethanol.

20

25

#### Make cDNA using Gibco's "SuperScript Choice System for cDNA Synthesis" kit First Strand cDNA Synthesis

Use 5ug of total RNA or 1ug of polyA+ mRNA as starting material. For total RNA, use 2ul of SuperScript RT. For polyA+ mRNA, use 1ul of SuperScript RT. Final volume of first strand synthesis mix is 20ul. RNA must be in a volume no greater than 10ul. Incubate RNA with 1ul of 100pmol T7-T24 oligo for 10 min at 70C. On ice, add 7 ul of: 4ul 5X 1<sup>st</sup> Strand Buffer, 2ul of 0.1M DTT, and 1 ul of 10mM dNTP mix. Incubate at 37C for 2 min then add SuperScript RT. Incubate at 37C for 1 hour.

#### Second Strand Synthesis

Place 1<sup>st</sup> strand reactions on ice.

Add: 91ul DEPC H2O  
30ul 5X 2<sup>nd</sup> Strand Buffer  
3ul 10mM dNTP mix  
1ul 10U/ul *E.coli* DNA Ligase  
4ul 10U/ul *E.coli* DNA Polymerase  
1ul 2U/ul RNase H

Make the above into a mix if there are more than 2 samples. Mix and incubate 2 hours at 16C. Add 2ul T4 DNA Polymerase. Incubate 5 min at 16C. Add 10ul of 0.5M EDTA

#### Clean up cDNA

Phenol:Chloroform:Isoamyl Alcohol (25:24:1) purification using Phase-Lock gel tubes:  
Centrifuge PLG tubes for 30 sec at maximum speed. Transfer cDNA mix to PLG tube. Add equal volume of phenol:chloroform:isamyl alcohol and shake vigorously (do not vortex). Centrifuge 5 minutes at maximum speed. Transfer top aqueous solution to a new tube. Ethanol precipitate: add 7.5X 5M NH4Oac and 2.5X volume of 100% ethanol. Centrifuge immediately at room temp. for 20 min, maximum speed. Remove sup then wash pellet 2X with cold 80% ethanol. Remove as much ethanol wash as possible then let pellet air dry. Resuspend pellet in 3ul RNase-free water.

#### In vitro Transcription (IVT) and labeling with biotin

Pipet 1.5ul of cDNA into a thin-wall PCR tube.

#### Make NTP labeling mix:

Combine at room temperature: 2ul T7 10xATP (75mM) (Ambion)  
2ul T7 10xGTP (75mM) (Ambion)  
1.5ul T7 10xCTP (75mM) (Ambion)

5                   1.5ul   T7 10xUTP (75mM) (Ambion)  
                  3.75ul  10mM Bio-11-UTP (Boehringer-Mannheim/Roche or  
Enzo)  
                  3.75ul  10mM Bio-16-CTP (Enzo)  
                  2ul     10x T7 transcription buffer (Ambion)  
                  2ul     10x T7 enzyme mix (Ambion)

Final volume of total reaction is 20ul. Incubate 6 hours at 37C in a PCR machine.

#### RNeasy clean-up of IVT product

Follow previous instructions for RNeasy columns or refer to Qiagen's RNeasy protocol handbook.

10       cRNA will most likely need to be ethanol precipitated. Resuspend in a volume compatible with the fragmentation step.

#### Fragmentation

15       15 ug of labeled RNA is usually fragmented. Try to minimize the fragmentation reaction volume; a 10 ul volume is recommended but 20 ul is all right. Do not go higher than 20 ul because the magnesium in the fragmentation buffer contributes to precipitation in the hybridization buffer.  
Fragment RNA by incubation at 94 C for 35 minutes in 1 x Fragmentation buffer.

#### 5 x Fragmentation buffer:

200 mM Tris-acetate, pH 8.1  
500 mM KOAc  
20       150 mM MgOAc

The labeled RNA transcript can be analyzed before and after fragmentation. Samples can be heated to 65C for 15 minutes and electrophoresed on 1% agarose/TBE gels to get an approximate idea of the transcript size range

#### Hybridization

25       200 ul (10ug cRNA) of a hybridization mix is put on the chip. If multiple hybridizations are to be done (such as cycling through a 5 chip set), then it is recommended that an initial hybridization mix of 300 ul or more be made.

Hybridization Mix: fragment labeled RNA (50ng/ul final conc.)

50 pM 948-b control oligo  
 1.5 pM BioB  
 5 pM BioC  
 25 pM BioD  
 100 pM CRE  
 0.1mg/ml herring sperm DNA  
 0.5mg/ml acetylated BSA  
 to 300 ul with 1xMES hyb. buffer

5

10 The instruction manuals for the products used herein are incorporated herein in their entirety.

Labeling Protocol Provided Herein

Hybridization reaction:

Start with non-biotinylated IVT (purified by RNeasy columns)  
 (see example 1 for steps from tissue to IVT)

15 IVT antisense RNA; 4 µg:       µl  
 Random Hexamers (1 µg/µl):   4 µl  
 H<sub>2</sub>O:                               µl

---

14 µl

20 - Incubate 70°C, 10 min. Put on ice.

Reverse transcription:

5X First Strand (BRL) buffer: 6 µl  
 0.1 M DTT:                       3 µl  
 50X dNTP mix:                  0.6 µl  
 25 H<sub>2</sub>O:                           2.4 µl  
 Cy3 or Cy5 dUTP (1mM):   3 µl  
 SS RT II (BRL):               1 µl

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16 µl

30 - Add to hybridization reaction.  
 - Incubate 30 min., 42°C.  
 - Add 1 µl SSII and let go for another hour.

- 50X dNTP mix (25mM of cold dATP, dCTP, and dGTP, 10mM of dTTP: 25  $\mu$ l each of 100mM dATP, dCTP, and dGTP; 10  $\mu$ l of 100mM dTTP to 15  $\mu$ l H<sub>2</sub>O. dNTPs from Pharmacia)

## 5

4  $\mu$ l 50mM EDTA

500 µl TE/sample spin at 7000g for 10 min, save flow through for purification

## 15

20

25

**Put on slide and hybridize overnight at 64°C.**

1X SSC: 5 min.                      12.5 mls 20X SSC in 250mls H<sub>2</sub>O

0.2X SSC: 5 min.                      2.5 mls 20X SSC in 250mls H<sub>2</sub>O

Dry slides in centrifuge, 1000 RPM, 1min.

Scan at appropriate PMT's and channels.

5        The results are shown in Figures 1 through 11. The lists of genes come from colorectal tumors from a variety of stages of the disease. The genes that are up regulated in the tumors (overall) were also found to be expressed at a limited amount or not at all in the body map. The body map for the colorectal project consists of ten tissues: Heart, Brain, Lung, Liver, Breast, Kidney, Prostrate, Small Intestine, Spleen, and Colon. The down regulated genes in tumors (overall) versus normal colon were not selected for their expression or lack of expression in the body map.

10        As indicated, some of the Accession numbers include expression sequence tags (ESTs). Thus, in one embodiment herein, genes within an expression profile, also termed expression profile genes, include ESTs and are not necessarily full length. Figure 1 shows 51 upregulated genes; Figure 2 shows 194 upregulated genes; Figure 3 shows 1144 upregulated genes and Figure 4 shows 1815 upregulated genes. The genes shown in Figures 1 and 5 are particularly preferred. Figure 5

15        shows 54 downregulated genes; Figure 6 shows 558 downregulated genes; and Figure 7 shows 1923 downregulated genes; and Figures 8, 9, 10 and 11 provide the Accession numbers for genes, including expression sequence tags, upregulated in tumor tissue compared to normal colon tissue.

#### Example 2

20        Expression studies were performed herein.

As indicated in Figure 21, CAA2 is upregulated in colon cancer tissue. CAA2 is found in chromosome 15, cytoband 15q15-22, interval D15S146-D15S117. CAA2 has N-myristoylation sites and a C-terminal microbody targeting signal. The preferred fragments shown in Figures 18 and 19 have a solubility of 1 mg/ 1 ml H<sub>2</sub>O.

25        As indicated in Figure 26, CAA9 is upregulated in colon cancer tissue. CAA9 is found in chromosome 5, cytoband 5q23.3, interval D5S471-D5S393.

As indicated in Figures 30A and 30B, CGA7 is upregulated in colon cancer tissue. CGA7 is found in chromosome 2.

As indicated in Figure 34, CGA8 is upregulated in colon cancer tissue.

As indicated in Figure 37, CJA8 is upregulated in colon cancer tissue. CJA8 is found in chromosome 11.

As indicated in Figure 38, BCN7 is upregulated in colon cancer tissue. BCN7 is found in chromosome 5, cytoband 5q22, interval D5S471-D5S393.



## CLAIMS

We claim:

1. A method of screening drug candidates comprising:
  - a) providing a cell that expresses an expression profile gene which encodes a protein selected from the group consisting of CZA8, BCX2, CBC2, CBC1, CBC3, CJA8, CJA9, CGA7, BCN5, CQA1, BCN7 and CQA2 or a fragment thereof;
  - b) adding a drug candidate to said cell; and
  - c) determining the effect of said drug candidate on the expression of said expression profile gene.
2. A method according to claim 1 wherein said determining comprises comparing the level of expression in the absence of said drug candidate to the level of expression in the presence of said drug candidate, wherein the concentration of said drug candidate can vary when present, and wherein said comparison can occur after addition or removal of the drug candidate.
3. A method according to claim 1 wherein the expression of said profile gene is decreased as a result of the introduction of the drug candidate.
4. A method of screening for a bioactive agent capable of binding to a colorectal cancer modulator protein (CCMP), wherein said CCMP is CJA8 or a fragment thereof, said method comprising combining said CCMP and a candidate bioactive agent, and determining the binding of said candidate agent to said CCMP.
5. A method for screening for a bioactive agent capable of modulating the activity of a colorectal cancer modulator protein (CCMP), wherein said CCMP is CJA8 or a fragment thereof, said method comprising combining said CCMP and a candidate bioactive agent, and determining the effect of said candidate agent on the bioactivity of said CCMP.
6. A method of evaluating the effect of a candidate colorectal cancer drug comprising:
  - a) administering said drug to a patient;
  - b) removing a cell sample from said patient; and
  - c) determining the expression profile of said cell.
7. A method according to claim 6 further comprising comparing said expression profile to an expression profile of a healthy individual.

8. A biochip comprising a nucleic acid segment encoding CJA81 or a fragment thereof, wherein said biochip comprises fewer than 1000 nucleic acid probes.
9. A method of diagnosing colorectal cancer comprising:  
a) determining the expression of a gene encoding CJA8 or a fragment thereof in a first tissue type of a first individual; and  
b) comparing said expression of said gene from a second normal tissue type from said first individual or a second unaffected individual;  
wherein a difference in said expression indicates that the first individual has colorectal cancer.
10. An antibody which specifically binds to CJA8, or a fragment thereof.
11. An antibody which specifically binds to CAA9, or a fragment thereof.
12. The antibody of Claim 11 wherein said fragment is selected from the group CAA9p1, CAA9p2, CAA9p3, CAA9p4, CAA9p4MAPS, CAA9p5 and CAA9p5MAPS.
13. The antibody of Claim 10, wherein said antibody is a monoclonal antibody.
14. The antibody of Claim 10, wherein said antibody is a humanized antibody.
15. The antibody of Claim 10, wherein said antibody is an antibody fragment.
16. A method for screening for a bioactive agent capable of interfering with the binding of a colorectal cancer modulator protein (CCMP) or a fragment thereof and an antibody which binds to said CCMP or fragment thereof, said method comprising:  
a) combining a CCMP or fragment thereof, a candidate bioactive agent and an antibody which binds to said CCMP or fragment thereof; and  
b) determining the binding of said CCMP or fragment thereof and said antibody.
17. A method for inhibiting colorectal cancer, said method comprising administering to a cell a composition comprising an antibody to CAJ8 or a fragment thereof.
18. The method of Claim 17 wherein said cell is a cell of an individual.
19. The method of Claim 18 wherein said individual has cancer.

20. The method of Claim 17 wherein said antibody is a humanized antibody.
21. The method of Claim 17 wherein said antibody is an antibody fragment.
22. A method for inhibiting colorectal cancer in a cell, wherein said method comprises administering to a cell a composition comprising antisense molecules to CJA8.
- 5 23. A peptide consisting essentially of CAA9p1, CAA9p2, CAA9p3, CAA9p4, CAA9p4MAPS, CAA9p5 or CAA9p5MAPS.
24. A composition comprising the peptide of Claim 23.
25. A method of eliciting an immune response in an individual, said method comprising administering to said individual a composition comprising CJA8 or a fragment thereof.
- 10 26. A method of eliciting an immune response in an individual, said method comprising administering to said individual a composition comprising a nucleic acid comprising a sequence encoding CJA8 or a fragment thereof.
27. A composition capable of eliciting an immune response in an individual, said composition comprising CJA8 or a fragment thereof and a pharmaceutically acceptable carrier.
- 15 28. A composition capable of eliciting an immune response in an individual, said composition comprising a nucleic acid comprising a sequence encoding CJA8 or a fragment thereof and a pharmaceutically acceptable carrier.
29. A method of treating an individual for colorectal cancer comprising administering to said individual an inhibitor of CJA8.
- 20 30. The method of Claim 29 wherein said inhibitor is an antibody.
31. A method for determining the prognosis of an individual with colorectal cancer comprising determining the level of CJA8 in a sample, wherein a high level of CJA8 indicates a poor prognosis.

32. A method of neutralizing the effect of a CJA8, or a fragment thereof, comprising contacting an agent specific for said protein with said protein in an amount sufficient to effect neutralization.

5 33. A method for localizing a therapeutic moiety to colorectal cancer tissue comprising exposing said tissue to an antibody to CJA8 or fragment thereof conjugated to said therapeutic moiety.

34. The method of Claim 33, wherein said therapeutic moiety is a cytotoxic agent.

35. The method of Claim 33, wherein said therapeutic moiety is a radioisotope.

10 36. A method of treating colorectal cancer comprising administering to an individual having colorectal cancer an antibody to CJA8 or fragment thereof conjugated to a therapeutic moiety.

37. The method of Claim 36, wherein said therapeutic moiety is a cytotoxic agent.

38. The method of Claim 36, wherein said therapeutic moiety is a radioisotope.

## FIGURE 1

Primary Key	told upregulated in Tumor over normal colon	Accession	Unigene CLUSTER	Unigene Descriptor
37677	>10	AA460530	Hs.98384	Homo sapiens orphan G protein-coupled receptor HG38 mRNA complete cds
6449	>10	X89986	Hs.32936	H. sapiens mRNA for NBK apoptotic inducer protein
4178	>10	U30246	Hs.110736	Human bumetanide-sensitive Na-K-Cl cotransporter (NKCC1) mRNA complete cds
18330	>10	AA216722	Hs.54481	Human mRNA for apolipoprotein E receptor 2 complete cds
5692	>10	X17644	Hs.2707	G1 to S phase transition 1
16810	>10	AA053636	Hs.129849	PBK1
33109	>10	W59961	Hs.22554	Human mRNA for KIAA0389 gene complete cds
37246	>10	AA449311	Hs.98658	Homo sapiens mitotic checkpoint protein kinase (BUB1) mRNA complete cds
2857	>10	M58597	Hs.2173	Fucosyltransferase 4 (alpha (13) fucosyltransferase myeloid-specific)
14338	>10	AA598712	Hs.23723	ESTs Weakly similar to ORF YPL212c [S. cerevisiae]
4676	9.6	U55208	Hs.78619	Homo sapiens human gamma-glutamyl hydrolase (hGH) mRNA complete cds
2192	7.8	L48211	Hs.20954	Homo Sapiens angiotensin II receptor gene complete cds
5793	7.4	X54942	Hs.83758	CDC28 protein kinase 2
18231	6.3	AA199747	Hs.79025	Human mRNA for KIAA0096 gene partial cds
8061	6.1	X68314	Hs.2704	Glutathione peroxidase 2 gastrointestinal
27117	5.0	AA405098	Hs.38178	ESTs Weakly similar to MOESIN/EZRIN/RADIXIN HOMOLOG [D.melanogaster]
12669	5.0	AA417030	Hs.5101	Homo sapiens protein regulating cytokinesis 1 (PRC1) mRNA complete cds
1106	4.8	HG2981-HT3127	EST - HG2981-HT3127	
2157	4.6	L41939	Hs.89403	Homo sapiens protein-tyrosine kinase EPHB2v (EPHB2) mRNA complete cds
13193	4.4	AA442763	Hs.20483	ESTs Highly similar to G2MITOTIC-SPECIFIC CYCLIN B2 [Mesocricetus auratus]
5690	4.4	X17620	Hs.118638	NUCLEOSIDE DIPHOSPHATE KINASE A
28050	4.1	AA479139	Hs.75393	Acid phosphatase 1 soluble
4540	3.5	U48807	Hs.2359	Human MAP kinase phosphatase (MKP-2) mRNA complete cds
26105	3.1	AA243133	Hs.48915	Homo sapiens serine/threonine kinase (BTAK) mRNA complete cds
19177	3.1	H10984	Hs.12338	ESTs
5780	3.1	X54469	Hs.789	GRO1 oncogene (melanoma growth stimulating activity alpha)
33620	3.0	W93943	Hs.59509	ESTs
4536	2.9	U48705	Hs.75562	Receptor protein-tyrosine kinase EDDR1
5928	2.9	X62048	Hs.75188	WEE1-LIKE PROTEIN KINASE
28258	2.8	AA503133	Hs.62273	ESTs
21256	2.7	R09195	Hs.151385	Homo sapiens mRNA for KIAA0564 protein partial cds

## FIGURE 1 (CONT.)

27748	AA453159	Hs.41723	Human kinesin-like spindle protein HKSP (HKSP) mRNA complete cds
25310	AA046745	Hs.110457	ESTs
2840	M30448	EST - M30448	
3834	U12595	Hs.2204	Human tumor necrosis factor type 1 receptor associated protein (TRAP1) mRNA partial cds
4674	U54989	Hs.93121	Human LGN protein mRNA complete cds
5769	X53800	Hs.89690	GRO3 oncogene
25050	AA011134	Hs.25863	ESTs Weakly similar to renin [H.sapiens]
41935	T29681	Hs.75761	Human serine kinase mRNA complete cds
26895	AA292765	Hs.42650	H.sapiens mRNA for M-phase phosphoprotein mpp5
1782	L12711	Hs.89543	Transketolase (Wernicke-Korsakoff syndrome)
25593	AA113149	Hs.8130	Homo sapiens IPL (IPL) mRNA complete cds
1487	J03934	Hs.80705	NAD(P)H:menadione oxidoreductase
7656	AA203428	Hs.7756	ESTs Moderately similar to ANKYRIN BRAIN VARIANT 2 [Homo sapiens]
683	D79997	Hs.41697	Human mRNA for KIAA0175 gene complete cds
836	D87444	Hs.79305	Human mRNA for KIAA0255 gene complete cds
3098	M77836	Hs.79217	PYRROLINE-5-CARBOXYLATE REDUCTASE
6879	Z29066	Hs.80896	H.sapiens nek2 mRNA for protein kinase
8880	Z29067	Hs.2236	H.sapiens nek3 mRNA for protein kinase
2473	M21904	Hs.79748	Antigen identified by monoclonal antibodies 4F2 TRA1.10 TROP4 and T43
36508	AA429621	Hs.79093	Human 100 kDa coactivator mRNA complete cds

## FIGURE 2

Primary Key	fold upregulated of Tumor	Accession	Unigene CLUSTER	Unigene Descriptor
33616	>10	W93726	Hs.55279	Protease Inhibitor 5 (maspin)
34197	>10	AA232315	Hs.12540	Homo sapiens clone 23797 and 23917 mRNA partial cds
19387	>10	H20128	Hs.31656	ESTs
8125	>10	AA330771	Hs.82911	Human protein-tyrosine phosphatase (HU-PP-1) mRNA partial sequence
18362	>10	AA223912	Hs.12013	Ribonuclease L (2'5'-oligoadenylate synthetase-dependent) inhibitor
39995	>10	H62474	Hs.108240	EST
19328	>10	H17808	Hs.22858	ESTs
38590	>10	AA596648	Hs.76202	Human mRNA for transcriptional activator hSNF2b complete cds
38456	>10	AA504343	Hs.101074	ESTs
17559	>10	AA128407	Hs.71190	ESTs
5619	>10	X14850	Hs.2711	HISTONE H2A.X
4029	>10	U21090	Hs.74598	Human DNA polymerase delta small subunit mRNA complete cds
15006	>10	U30246	Hs.110736	Human bumetanide-sensitive Na-K-Cl cotransporter (NKCC1) mRNA complete cds
3659	>10	U04313	Hs.55279	Protease Inhibitor 5 (maspin)
26916	>10	AA331393	Hs.47378	ESTs
1346	>10	HG4716-HT5158	EST - HG4716-HT5158	
37491	10.0	AA455239	Hs.87630	ESTs Highly similar to CHROMOSOME CONDENSATION PROTEIN DPY-27 [Caenorhabditis elegans]
13110	9.8	AA435840	Hs.19114	Homo sapiens mRNA for high mobility group protein HMG2a
4676	9.8	U55206	Hs.78619	Homo sapiens human gamma-glutamyl hydrolase (hGH) mRNA complete cds
21655	8.7	R38239	Hs.25276	EST
14723	8.3	D59894	Hs.34782	ESTs
5793	7.4	X54942	Hs.83758	CDC28 protein kinase 2
29848	7.1	N22107	Hs.124215	ESTs
9347	7.0	H03686	Hs.112013	ESTs
6078	7.0	X69141	Hs.48876	FARNESYL-DIPHOSPHATE FARNESYLTRANSFERASE
9326	6.8	D89377	Hs.89404	Msh (Drosophila) homeo box homolog 2
1566	6.7	J05614	EST - J05614	
25675	6.7	AA129757	Hs.54602	ESTs Highly similar to 60S RIBOSOMAL PROTEIN L22 [Rattus norvegicus]
20126	6.4	N22015	Hs.18457	ESTs
6061	6.1	X68314	Hs.2704	Glutathione peroxidase 2 gastrointestinal
10867	6.1	AA088458	Hs.19322	ESTs Weakly similar to ALLU SUBFAMILY J1 [H.sapiens]
18062	6.0	AA179845	Hs.73625	ESTs Moderately similar to rabkinesin-6 [M.musculus]
4093	5.9	U25182	Hs.83383	Human antioxidant enzyme AOE37-2 mRNA complete cds
18290	5.8	AA211901	Hs.86430	ESTs
5330	5.8	U91327	EST - U91327	
4244	5.7	U33286	Hs.90073	Human chromosome segregation gene homolog CAS mRNA complete cds

## FIGURE 2 (CONT.)

6928	5.7	Z46929	Hs.2316	SRY (sex-determining region Y)-box 9 (campomelic dysplasia autosomal sex-reversal)
6160	5.6	X74794	Hs.89699	CDC21 HOMOLOG
31487	5.4	N69507	Hs.129849	ESTs
9470	5.3	H46617	EST - H46617	
33458	5.0	W86835	Hs.14158	Homo sapiens mRNA for KIAA0636 protein complete cds
12669	5.0	AA417030	Hs.5101	Homo sapiens protein regulating cytokinesis 1 (PRC1) mRNA complete cds
1106	4.8	HG2981-HT3127	EST - HG2981-HT3127	
34367	4.8	AA251758	Hs.40323	Homo sapiens spleen mitotic checkpoint BUB3 (BUB3) mRNA complete cds
11595	4.8	AA242819	Hs.32539	ESTs
17622	4.8	AA131584	Hs.71435	ESTs Weakly similar to SOF1 PROTEIN [Saccharomyces cerevisiae]
34754	4.7	AA287642	Hs.81848	Human mRNA for KIAA0078 gene complete cds
25038	4.7	AA010065	Hs.83758	CDC28 protein kinase 2
5312	4.6	U90716	Hs.79187	Human cell surface protein HCAR mRNA complete cds
8085	4.6	AA314779	Hs.105484	ESTs Weakly similar to LITHOSTATHINE 1 BETA PRECURSOR [H.sapiens]
33666	4.6	W95477	Hs.50582	ESTs
8264	4.5	AA401334	Hs.106941	ESTs
34479	4.5	AA262080	Hs.110736	Human bumetanide-sensitive Na-K-Cl cotransporter (NKCC1) mRNA complete cds
7898	4.4	AA263032	Hs.81634	ESTs
10716	4.4	AA053319	Hs.9951	ESTs
5690	4.4	X17820	Hs.118638	NUCLEOSIDE DIPHOSPHATE KINASE A
20203	4.3	N26855	Hs.5858	ESTs Moderately similar to IIII ALU SUBFAMILY SQ WARNING ENTRY IIII [H.sapiens]
10923	4.2	AA116036	Hs.9329	ESTs
28050	4.1	AA479139	Hs.75393	Acid phosphatase 1 soluble
10970	4.1	AA129390	Hs.5285	ESTs
4149	4.1	U28386	Hs.2397	RAG (recombination activating gene) cohort 1
5767	4.1	X53793	Hs.118226	MULTIFUNCTIONAL PROTEIN ADE2
26596	4.0	AA279943	Hs.88671	ESTs
8961	3.9	AFX-	AFX-HUMTFR/M11507_3	
38604	3.9	AA598803	Hs.111496	ESTs
30560	3.9	N49284	Hs.1334	MYB PROTO-ONCOGENE PROTEIN
8513	3.8	AA446990	Hs.103135	ESTs
14509	3.8	AA609943	Hs.32793	ESTs
25284	3.8	AA045074	Hs.110146	ESTs Weakly similar to 52-kD SS-A/Ro autoantigen [H.sapiens]
27354	3.8	AA425221	Hs.81688	ESTs
18385	3.8	AA227219	Hs.110826	Homo sapiens CAGF9 mRNA partial cds
25240	3.7	AA039713	Hs.110406	ESTs
16854	3.7	AA055552	Hs.71622	ESTs Weakly similar to KIAA0319 [H.sapiens]
3709	3.7	U07550	Hs.1197	Heat shock 10 kD protein 1 (chaperonin 10)
13606	3.5	AA458437	Hs.20386	ESTs Weakly similar to CLEAVAGE STIMULATION FACTOR 64 KD SUBUNIT [H.sapiens]
8338	3.4	AA417152	Hs.5101	Homo sapiens protein regulating cytokinesis 1 (PRC1) mRNA complete cds



## FIGURE 2 (CONT.)

387	D28589	EST - D28589	ESTs Highly similar to KINESIN-LIKE PROTEIN KIF4 [Mus musculus]
15643	W58247	Hs.27437	ESTs
13838	AA465342	Hs.34045	ESTs
251	D14520	Hs.84728	Basic transcription element binding protein 2
3778	U09848	Hs.363	Zinc finger protein 139 (clone pHZ-37)
5660	X16396	Hs.37791	NAD-DEPENDENT METHYLENETETRAHYDROFOLATE DEHYDROGENASE
17365	AA101551	Hs.68900	ESTs
33985	AA181580	Hs.81690	Homo sapiens importin beta subunit mRNA complete cds
19233	H12634	Hs.8104	ESTs
13767	AA463234	Hs.119387	ESTs
4738	U58766	Hs.75801	Human FX protein mRNA complete cds
17041	AA070364	EST - RC_AA070364	ESTs
15504	W28362	Hs.44131	ESTs
7401	AA094800	Hs.55682	Human translation initiation factor eIF3 p86 subunit mRNA complete cds
18683	F04258	Hs.36454	ESTs Highly similar to INORGANIC PYROPHOSPHATASE [Bos taurus]
23930	T96690	Hs.125123	ESTs Weakly similar to IIII ALU SUBFAMILY
11288	AA196512	Hs.25916	ESTs
170	D00596	Hs.82962	Thymidylate synthase
11659	AA251909	Hs.36708	Homo sapiens MAD3-like protein kinase mRNA complete cds
14134	AA489080	Hs.3556	ESTs Highly similar to phosphorylation regulatory protein HP-10 [H.sapiens]
11140	AA158132	Hs.11817	ESTs Highly similar to YSA1 PROTEIN [Saccharomyces cerevisiae]
17925	AA164209	Hs.31730	Homo sapiens RRM RNA binding protein Gry-fbp (GRY-RBP) mRNA complete cds
26530	AA278650	Hs.73291	ESTs
7445	AA104023	Hs.110048	ESTs
18055	AA179387	Hs.73596	ESTs
15174	U82987	Hs.87246	Human Bcl-2 binding component 3 (bbc3) mRNA partial cds
33620	W93943	Hs.59509	ESTs
1932	L24804	Hs.75839	Human (p23) mRNA complete cds
39556	F03738	Hs.3657	ESTs
1605	L00058	Hs.79070	V-myc avian myelocytomatosis viral oncogene homolog
4536	U48705	Hs.75562	Receptor protein-tyrosine kinase EDDR1
36200	AA421164	Hs.107213	ESTs
12313	AA397916	Hs.22595	ESTs
19867	H61476	Hs.15641	ESTs
6081	X69398	Hs.82585	CD47 antigen (Rh-related antigen integrin-associated signal transducer)
16708	AA043944	Hs.62663	ESTs
357	D26156	Hs.76202	Human mRNA for transcriptional activator hSNF2b complete cds
8059	AA310967	Hs.5080	ESTs Weakly similar to T04A8.11 [C.elegans]
35830	AA411448	Hs.139386	ESTs
20151	N22895	Hs.6831	Homo sapiens clone 1400 unknown protein mRNA partial cds

## FIGURE 2 (CONT.)

26258	AA505133	Hs.62273	ESTs	
8616	AA460077	Hs.28555	ESTs	
8480	X91788	Hs.84974	H.sapiens mRNA for lcn protein	
14566	AA621122	Hs.5198	ESTs	
14182	AA490885	Hs.21766	ESTs	
35955	AA412528	Hs.20183	ESTs Weakly similar to ORF2 consensus sequence encoding endonuclease and reverse transcriptase minus RNaseH [R.norvegicus]	
17642	AA132983	Hs.44155	ESTs Moderately similar to C-1-TETRAHYDROFOLATE SYNTHASE CYTOPLASMIC [H.sapiens]	
6131	X72841	Hs.2758	Human retinoblastoma-binding protein (RbAp46) mRNA complete cds	
6444	X89750	Hs.90077	H.sapiens mRNA for TGIF protein	
7701	AA215333	Hs.97101	ESTs	
42534	W73189	Hs.89403	Homo sapiens protein-tyrosine kinase EPHB2 (EPHB2) mRNA complete cds	
34796	AA291259	Hs.97101	ESTs	
1923	L23808	Hs.1695	Matrix metalloproteinase 12 (macrophage elastase)	
10951	AA126719	Hs.25282	ESTs	
11308	AA207114	Hs.27842	ESTs	
4086	U24704	Hs.111709	Human antisecretory factor-1 mRNA complete cds	
5587	X13482	Hs.80506	U2 SMALL NUCLEAR RIBONUCLEOPROTEIN A'	
19841	H59617	Hs.5199	ESTs Highly similar to UBQUITIN-CONJUGATING ENZYME E2-17 KD [Drosophila melanogaster]	
7614	AA187579	Hs.102696	ESTs Weakly similar to Yel007c-ap [S.cerevisiae]	
11362	AA227261	Hs.20922	ESTs	
13866	AA476319	Hs.5327	ESTs	
2993	M64929	Hs.75200	Protein phosphatase 2 (formerly 2A) regulatory subunit B (PR 52) alpha isoform	
12986	AA430032	Hs.7487	ESTs Moderately similar to PTTG gene product [R.norvegicus]	
5932	X62153	Hs.82479	Minichromosome maintenance deficient (S. cerevisiae) 3	
39434	AA497013	Hs.142592	ESTs	
38185	AA487508	Hs.9877	Homo sapiens mRNA for KIAA0688 protein complete cds	
1424	J02645	Hs.81613	Eukaryotic translation initiation factor 2A	
21876	R43286		EST - RC_R43286	
6485	X92098	Hs.75914	H.sapiens mRNA for transmembrane protein mp24	
7960	AA285277	Hs.8932	Homo sapiens brain expressed ring finger protein mRNA complete cds	
452	D38076	Hs.24763	RAN binding protein 1	
11701	AA253031	Hs.31730	Homo sapiens RRM RNA binding protein Gry-rbp (GRY-RBP) mRNA complete cds	
36390	AA428291	Hs.108527	ESTs Weakly similar to No definition line found [C.elegans]	
14420	AA600322	Hs.18574	ESTs Highly similar to AAC-RICH MRNA CLONE AAC3 PROTEIN [Dictyostelium discoideum]	
6387	X85372	Hs.105465	H.sapiens mRNA for Sm protein F	
1497	J04088	Hs.3378	Topoisomerase (DNA) II alpha (170KD)	
27872	AA459254	Hs.48855	ESTs	
8163	AA357394	Hs.98073	ESTs	
23065	T23539	Hs.7165	ESTs Highly similar to zinc finger protein [M.musculus]	
20837	N69263	Hs.20524	ESTs Highly similar to HEXOKINASE TYPE I [Homo sapiens]	

## FIGURE 2 (CONT.)

17352	2.3	AA100925	Hs.20990	ESTs	
28796	2.3	D51272		EST - RC_D51272_s	
28679	2.3	AA281733	Hs.4310	ESTs	
24092	2.3	W42845	Hs.14611		Homo sapiens protein tyrosine phosphatase PIR1 mRNA complete cds
5875	2.3	X59405	Hs.83532		Membrane cofactor protein (CD46 trophoblast-lymphocyte cross-reactive antigen)
7404	2.3	AA094989	Hs.7381		Homo sapiens voltage dependent anion channel protein mRNA complete cds
6368	2.3	X85373	Hs.77496		H.sapiens mRNA for Sm protein G
25050	2.3	AA011134	Hs.25863		ESTs Weakly similar to renin [H.sapiens]
41935	2.3	T29681	Hs.75761		Human serine kinase mRNA complete cds
3343	2.3	M97936	Hs.21486		SIGNAL TRANSDUCER AND ACTIVATOR OF TRANSCRIPTION 1-ALPHA/BETA
5937	2.2	X62534	Hs.80684		High-mobility group (nucleosome chromosomal) protein 2
7387	2.2	AA093977	Hs.71475	ESTs	
20843	2.2	N69352	Hs.5683		Homo sapiens mRNA for ATP-dependent RNA helicase #46 complete cds
28448	2.2	AA621752	Hs.76887		Human 26S proteasome-associated pad1 homolog (POH1) mRNA complete cds
651	2.2	D78129		EST - D78129	
11688	2.2	AA252572	Hs.103300		Homo sapiens diphthamide biosynthesis protein-2 (DPH2) mRNA complete cds
11803	2.2	AA257971	Hs.21214	ESTs	
4046	2.2	U22376	Hs.1334		MYB PROTO-ONCOGENE PROTEIN
20276	2.2	N32919	Hs.27931	ESTs	
34370	2.1	AA251829	Hs.104058		ESTs Weakly similar to HYPOTHETICAL 27.4 KD PROTEIN IN MER2-OPR7 INTERGENIC REGION [Saccharomyces cerevisiae]
14562	2.1	AA621340	Hs.10600		ESTs Weakly similar to HYPOTHETICAL 39.6 KD PROTEIN IN MTD1-NUP133 INTERGENIC REGION [Saccharomyces cerevisiae]
3461	2.1	S75256		EST - S75256	
924	2.1	HG1112-HT1112		EST - HG1112-HT1112	
24348	2.1	W86469	Hs.77899		Tropomyosin alpha chain (skeletal muscle)
10898	2.1	AA112063	Hs.15313		ESTs Weakly similar to PRE-MRNA SPLICING HELICASE BRR2 [S. cerevisiae]
381	2.1	D28473	Hs.78770		Isoleucine-tRNA synthetase
11528	2.1	AA236018	Hs.10724		ESTs Weakly similar to unknown [S. cerevisiae]
25593	2.1	AA113149	Hs.8130		ESTs Weakly similar to unknown [S. cerevisiae]
38040	2.1	AA481403	Hs.107213		Homo sapiens IPL (IPL) mRNA complete cds
4111	2.1	U26312	Hs.83350	ESTs	
61	2.0	AC002115	Hs.83379		Human heterochromatin protein HP1-Hs-gamma mRNA complete cds
9112	2.0	D16611	Hs.89866		Cytochrome c oxidase subunit Vb
380	2.0	D28423			Coproporphyrinogen oxidase (coproporphyrin harderoporphyria)
377	2.0	D28364		EST - D28423	
28379	2.0	AA609710	Hs.42582	ESTs	
24230	2.0	W72276	Hs.5950	ESTs	
40212	2.0	H88535	Hs.9564		Human clone 121711 defective mariner transposon Hsmar2 mRNA sequence
8118	2.0	AA328993	Hs.104558	ESTs	

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### FIGURE 3

Primary Key	Accession	Organism	Unigene	Unigene Description
33616	W83736	>10	HA5279	Protease inhibitor 5 (matipin)
34197	AA232315	>10	HA12340	Homo sapiens clone 23197 and 23117 mRNA partial cds.
19397	H20178	>10	HA1356	ESTs
8125	AA330771	>10	HA8291	Human protein-tyrosine phosphatase (HU-PP-1) mRNA partial sequence
13262	AA2323912	>10	HA12103	Ribonuclease L (2S-oligoadenylate synthetase-dependent) inhibitor
39695	H82474	>10	HA106240	EST
19328	H17808	>10	HA22659	ESTs
33590	AA503648	>10	HA73022	Human mRNA for transcriptional activator HNF2B3 complete cds
34356	AA504343	>10	HA101074	ESTs
17359	AA128407	>10	HA71190	ESTs
6106	X10653	>10	HA8364	SRV (sex determining region Y)-box 4
8648	AA605616	>10	HA69423	Homo sapiens active proteinase-like protease (nast) mRNA complete cds
5819	X14650	>10	HA12711	HISTONE H2A.X
5603	X14253	>10	HA73561	Tetrahymena-derived growth factor 1
37677	AA406030	>10	HA98384	Homo sapiens orp1in G protein-coupled receptor HC39 mRNA complete cds
11561	AA236833	>10	HA19222	Est-1
39737	H2131	>10	HA107561	ESTs
16490	AA026418	>10	HA15139	ESTs
32240	R50976	>10	HA12013	Ribonuclease L (2S-oligoadenylate synthetase-dependent) inhibitor
12480	AA403116	>10	HA9280	Homo sapiens U-PRNP-associated cyclophilin (USA-CyP) mRNA complete cds
21440	X14349	>10	HA74014	Phospholipase C beta 4
12143	AA4306991	>10	HA107396	ESTs
32006	HA62696	>10	HA107309	ESTs Weekly similar to ZK1053.5 (C-olepin)
39535	F02450	>10	HA111960	ESTs Moderately similar to unknown protein [H.sapiens]
41005	H79519	>10	HA73267	ESTs
6449	X89946	>10	HA32936	H.sapiens mRNA for NBK apoptotic inducer protein
37653	AA4060317	>10	HA99513	ESTs
4178	U32246	>10	HA110256	Human bumetanide sensitive Na-K-Cl cotransporter (NKCC1) mRNA complete cds
1883	L19161	>10	HA121541	TRANSLATIONAL INITIATION FACTOR 2 GAMMA SUBUNIT
19797	H86079	>10	HA37862	ESTs
8092	AA316272	>10	HA24500	ESTs
37074	AA445844	>10	HA89606	ESTs
39405	D50975	>10	HA21281	ESTs
10747	AA405941	>10	HA31953	ESTs
5002	U72781	>10	HA8990	Human karyopherin beta 3 mRNA complete cds
33791	X40983	>10	HA65566	ESTs
8188	X76029	>10	HA2341	NEUROMEDIN U-25 PRECURSOR
13136	AA303560	>10	HA7327	ESTs
5963	X63532	>10	HA2877	Cathelin 3 (P-cathelin)
38178	AA481492	>10	HA76272	Homo sapiens clone 23352 mRNA sequence
30938	N55551	>10	HA84938	Cathepsin B
34632	AA245079	>10	HA123873	ESTs
17937	AA169579	>10	HA72965	ESTs
23832	H2018	>10	HA16961	ESTs
34696	AA303490	>10	HA93760	ESTs
10233	RT1437	>10	HA9081	ESTs Highly similar to PHENYLALANINE SYNTHETASE ALPHA CHAIN CYTOSOLIC [Saccharomyces cerevisiae]
10233	HA14392	>10	HA112227	ESTs
38330	AA493862	>10	HA112227	ESTs
1349	G4747-H15195	>10	HA112227	ESTs
30962	AA442062	>10	HA139115	ESTs
4975	U10168	>10	HA84374	Human MEK5 mRNA complete cds
5510	X035960	>10	HA50390	Cell division cycle 2 G1 to S and G2 to M
3021	H68541	>10	HA73326	Protein tyrosine phosphatase non-receptor type 4
11734	AA137246	>10	HA84980	ESTs
36371	AA426017	>10	HA105761	ESTs
459	D38223	>10	HA77770	Human mRNA for cathrin-like protein complete cds
17419	AA115349	>10	HA65566	EST
14054	AA455223	>10	HA24992	ESTs

## FIGURE 3 (CONT.)

5201	>10	U73524	Hs.87465	Human putative ATP/GTP-binding protein (HEAB) mRNA complete cds
6994	>10	U72514	Hs.12045	Human C21 mRNA complete cds
28355	>10	AA356375	Hs.92291	ESTs
4485	>10	U43944	Hs.14732	MALATE OXIDOREDUCTASE
10748	>10	AA055992	Hs.14543	ESTs
8111	>10	AA323787	Hs.4770	ESTs
19399	>10	H20185	Hs.31734	EST
32195	>10	R04771	Hs.22355	ESTs Weakly similar to ORF YOR258w (S. cerevisiae)
38970	>10	AA609749	Hs.112759	ESTs
21519	>10	R27875	EST - RC_R27875	
34013	>10	AA190888	EST - RC_AA190888	
6167	>10	X74687	Hs.12013	Ribonuclease L (2'-5'-oligoadenylate synthetase-dependent) inhibitor
41107	>10	R01834	Hs.119878	ESTs
5966	>10	X04810	Hs.7977	Proteinase convertase subtilisin/kexin type 1
11603	>10	AA343052	Hs.16389	ESTs Highly similar to GONADOTROPIN-RELEASING HORMONE RECEPTOR (Rattus norvegicus)
40468	>10	N26286	Hs.132991	Human sapientin synthase mRNA complete cds
6316	>10	X11889	Hs.16351	H. sapiens mRNA for p0071 protein
5315	>10	U57341	EST - U57341	
4792	>10	F04022	Hs.27885	ESTs
16676	>10	W87277	Hs.17546	ESTs
24197	>10	U37721	Hs.81771	Human L-hydroxy acid hydrolase mRNA complete cds
4713	>10	AA504462	Hs.105730	ESTs
38460	>10	AA191722	Hs.54481	Human mRNA for apolipoprotein E receptor 2 complete cds
18330	>10	F09738	Hs.12562	ESTs
18182	>10	Z98394	Hs.94432	ESTs Moderately similar to ALU SUBFAMILY C
42768	>10	AA181348	Hs.98178	ESTs
34014	>10	AA054435	Hs.60753	ESTs
16335	>10	X95137	Hs.41723	Human kinesin-like sprind protein HKSP (HKSP) mRNA complete cds
6384	>10	N23003	Hs.42186	ESTs
28853	>10	AA521471	Hs.102852	ESTs
38553	>10	AA164289	Hs.24008	ESTs
11160	>10	G33444-H73521	EST - HG33444-H73521	
1158	>10	AA090842	Hs.19736	ESTs Weakly similar to HYPOTHETICAL 36.7 KD PROTEIN C27.22C IN CHROMOSOME 1 (Schistosoma myxoid pomb)
7325	>10	AA478294	EST - RC_AA478294	
37978	>10	AA478294	ESTs	
31136	>10	N63512	Hs.14494	ESTs Weakly similar to M01F1.4 (C. elegans)
11813	>10	AA258158	Hs.22153	ESTs
10992	>10	AA132523	Hs.27380	Human sapientin BAC clone RG118C02 from Tpis
5789	>10	X54925	Hs.83166	Human metalloproteinase 1 (interstitial collagenase)
16903	>10	AA083200	Hs.75337	Human mRNA for KIAA0833 gene partial cds
17654	>10	AA132490	Hs.82169	ESTs
20037	>10	H90079	Hs.31487	ESTs
39436	>10	D52082	Hs.74574	Human Cdc2-dependent activator protein for secretion mRNA complete cds
19727	>10	H52702	Hs.36690	ESTs
41361	>10	R42278	Hs.31743	H. sapiens mRNA for TRES
23716	>10	R79111	Hs.23388	ESTs
35769	>10	AA406206	Hs.104746	ESTs
33980	>10	AA180223	Hs.8454	CAMP-DEPENDENT PROTEIN KINASE TYPE II-ALPHA REGULATORY CHAIN
40811	>10	N89114	Hs.21336	H. sapiens mRNA for orphan nuclear hormone receptor
37094	>10	AA444495	Hs.125128	Human sapientin Ran binding protein 2 (RanBP2 alpha) mRNA partial cds
26935	>10	AA347193	Hs.77831	ESTs Weakly similar to NAOH-UBIQUINONE OXIDOREDUCTASE CHAIN 4 (Caenorhabditis elegans)
2189	>10	L47278	EST - L47278	
4382	>10	U38817	Hs.36820	Bloom syndrome
42354	>10	W19248	Hs.89319	ESTs
9127	>10	D30037	Hs.91447	PHOSPHATIDYLINOSITOL
20814	>10	N59230	Hs.18837	ESTs
5692	>10	X17644	Hs.2707	G1 to S phase transition 1
4388	>10	U40714	Hs.109631	Human synapdo-RNA synthetase mRNA complete cds
3588	>10	U01157	Hs.185	Glucagon-like peptide-1 receptor
24645	>10	Z38482	Hs.12403	ESTs
33505	>10	AA398860	Hs.97301	EST

## FIGURE 3 (CONT.)

23682	>10	T86874	Hs.18253	ESTs
37456	>10	AA454832	Hs.123157	ESTs
10840	>10	AA084104	Hs.30177	ESTs
25179	>10	AA031258	Hs.11319	H. sapiens mRNA for Niasin-2
21	>10	AB009005	Hs.143090	N. sapiens histone H4 gene
18782	>10	F09458	Hs.12471	ESTs
39221	>10	AA421546	Hs.59234	Homo sapiens protein phosphatase with EF-hand-1 (PPER-1) mRNA complete cds
39232	>10	AA821409	Hs.112836	ESTs
42962	>10	H88423	Hs.105413	ESTs
22372	>10	RG2831	Hs.28386	EST
38110	>10	AA020709	Hs.20983	ESTs Weakly similar to HYPOTHETICAL 90.8 KD PROTEIN TOSH10.7 IN CHROMOSOME II [C.elegans]
18810	>10	AA033636	Hs.123849	ESTs
29645	>10	H85940	Hs.42116	ESTs
36405	>10	AA428406	Hs.10801	Homo sapiens mRNA for KIAA0350 protein partial cds
4029	>10	U21090	Hs.74588	Human DNA polymerase delta small subunit mRNA complete cds
15006	>10	U30246	Hs.110736	Human bumetanide-sensitive Na-K-Cl cotransporter (NKCC1) mRNA complete cds
22382	>10	AA044425	Hs.103446	ESTs
34361	>10	AA380298	Hs.107119	ESTs
40394	>10	N33388	Hs.112227	ESTs
18074	>10	AA001507	Hs.58961	ESTs
27045	>10	AA000570	Hs.75507	Homo sapiens mRNA for KIAA0382 protein partial cds
31484	>10	N84466	Hs.48883	ESTs
39504	>10	D06332	Hs.10726	ESTs
20304	>10	N34895	Hs.7749	Homo sapiens clone 23315 mRNA sequence
36385	>10	AA426353	Hs.80394	ESTs
39651	>10	AA388738	Hs.109041	ESTs
40611	>10	N81724	Hs.8409	ESTs
228	>10	D13845	Hs.2471	Human mRNA for KIAA0220 gene complete cds
5823	>10	X14975	Hs.133025	T-CELL SURFACE GLYCOPROTEIN CD1E PRECURSOR
35869	>10	AA410295	Hs.87811	ESTs
5240	>10	U05946	Hs.29494	Human brain secretory protein hSec1p (hSEC10) mRNA complete cds
19391	>10	H0688	Hs.33785	ESTs
38228	>10	AA329177	Hs.109383	ESTs
35788	>10	AA410231	Hs.90069	ESTs
3163	>10	N84424	Hs.13355	Cathepsin E
22400	>10	R84109	Hs.29487	ESTs
22657	>10	N82389	Hs.107242	ESTs
39062	>10	AA820333	Hs.112857	EST
25082	>10	AA017237	Hs.101139	ESTs
40376	>10	N87607	Hs.109450	Human Rho-associated coiled-coil containing protein kinase p16OROCK mRNA complete cds
5857	>10	X58377	Hs.1721	Human mRNA for adipogenesis inhibitory factor
28151	>10	H00134	Hs.141382	ESTs
39523	>10	F02302	Hs.105960	ESTs
8155	>10	X14331	Hs.74619	DNA primase polypeptide 2A (58kD)
521	>10	N43259	Hs.123029	H. sapiens mRNA for granulocyte chemotactic protein
36958	>10	AA423600	Hs.105107	ESTs
40880	>10	N49104	Hs.173108	NUCLEAR FACTOR RPI140
37816	>10	AA489954	Hs.104820	EST
22951	>10	AG344556	Hs.135159	EST
22072	>10	R49406	Hs.28410	ESTs
39532	>10	H08778	EST - RC_H08279	
23196	>10	T05300	Hs.3041	ESTs Weakly similar to B0035.14 [C.elegans]
28331	>10	H08116	Hs.39063	ESTs
38316	>10	AA400500	Hs.18747	Homo sapiens ribonuclease P protein subunit p20 (RPP20) mRNA complete cds
37829	>10	AA470084	Hs.98358	ESTs
3870	>10	U14518	Hs.1584	Cationic protein A (TAC)
39178	>10	AA021091	Hs.72087	ESTs
41793	>10	T03887	Hs.7327	ESTs
32686	>10	W85876	Hs.59741	ESTs
35756	>10	AA406168	Hs.16349	Homo sapiens KIAA0431 mRNA partial cds

## FIGURE 3 (CONT.)

32277	>10	R61493	Hs.28986	Human mRNA for rod photoreceptor protein, complete cds
5556	>10	X07878	Hs.89781	Wingless-type MMTV integration site 2 human homolog
6332	>10	X51533	Hs.82773	H.sapiens RBQ-1 mRNA
41040	>10	N91948	Hs.125004	ESTs
38080	>10	AA020552	EST - RC_AA020552_7	
20307	>10	N14830	Hs.37636	ESTs
18280	>10	AA026801	Hs.86277	ESTs
41065	>10	N90618	Hs.28554	ESTs
33109	>10	W69961	Hs.22564	Human mRNA for KIAA0339 gene complete cds
38015	>10	AA477421	Hs.21801	ESTs
30810	>10	N90138	Hs.47032	EST
34015	>10	AA191353	Hs.109894	ESTs
40559	>10	N33024	Hs.23460	ESTs
1445	>10	J0027	Hs.73855	MHC class I protein HLA-G
13242	>10	AA445994	Hs.21331	ESTs
37893	>10	AA479548	Hs.52871	H.sapiens mRNA for SYT
42342	>10	T88379	Hs.79353	Human sapiens E2F-related transcription factor (DP-1) mRNA complete cds
37135	>10	AA447540	Hs.89112	ESTs
20564	>10	N55443	Hs.23625	ESTs
28141	>10	AA468432	Hs.59407	ESTs
21240	>10	R08613	Hs.20188	ESTs
34382	>10	AA325512	Hs.10069	ESTs
35948	>10	AA331965	Hs.102156	Human sapiens survival of motor neuron protein interacting protein 1 (SIP1) mRNA complete cds
33853	>10	AA173280	Hs.87367	Human HOXA1 mRNA long transcript and alternatively spliced forms complete cds
42913	>10	N89218	Hs.108232	ESTs
34972	>10	AA05512	Hs.104741	ESTs
36959	>10	U04313	Hs.55279	Protease inhibitor 5 (maspin)
17051	>10	AA070801	Hs.51615	ESTs
34372	>10	AA321873	Hs.143853	ESTs
19203	>10	H11593	Hs.28119	ESTs
20781	>10	N68057	Hs.80357	Human sapiens telomeric repeat binding factor (TRF1) mRNA complete cds
24215	>10	W88425	Hs.15787	ESTs
37248	>10	AA449311	Hs.88658	Human sapiens mitotic checkpoint protein kinase (BUB1) mRNA complete cds
6790	>10	Y12394	Hs.3886	Human sapiens Importin-alpha homolog (SRP gamma) mRNA complete cds
25008	>10	AA149007	Hs.103871	EST
1832	>10	L17328	Hs.103419	Human FEZ2 mRNA partial cds
36971	>10	AA099333	Hs.139867	EST
36307	>10	AA024803	Hs.98474	EST
35047	>10	AA011031	Hs.101182	ESTs
33343	>10	W79834	Hs.58559	ESTs Weakly similar to Molekin [H. musculus]
5799	>10	X55330	Hs.111681	Adenylylglucosaminidase
23623	>10	T84047	Hs.19428	ESTs
13143	>10	AB8353	Hs.39332	ESTs
28281	>10	AA336422	Hs.139312	ESTs Weakly similar to line-1 protein ORF2 [H.sapiens]
33501	>10	AA102891	Hs.142179	ESTs
37159	>10	AA447714	Hs.114121	EST - RC_AA447714
40064	>10	H72283	Hs.38483	Human mRNA for KIAA0285 gene partial cds
38867	>10	AA093215	Hs.3144	Human cdk-b mRNA complete cds
23795	>10	N20641	Hs.48230	ESTs Highly similar to HYPOTHETICAL MYELOID CELL LINE PROTEIN 3 [Homo sapiens]
5960	>10	AA231638	Hs.88882	ESTs
37611	>10	X83575	Hs.88512	ATPase CaeA+ transducing plasma membrane 2 (NOTE: redefinition of symbol)
36753	>10	AA445868	Hs.32970	Human signaling lymphocytic activation molecule (SLAM) mRNA complete cds
28274	>10	AA320111	Hs.87439	ESTs
32789	>10	W02779	Hs.58271	ESTs Moderately similar to kinesin-73 [D.melanogaster]
37188	>10	AA447772	Hs.125153	ESTs
38433	>10	D58037	Hs.33650	Human thymidine kinase 2 (TK2) mRNA complete cds
1570	>10	K01383	EST - K01383	

### FIGURE 3 (CONT.)

300617	N52646	Hs_471033	ESTs	ESTs Weekly similar to putative p150 [H.sapiens]	TRV [III] [H.sapiens]
351066	A371581	Hs_142355	ESTs	EST Weekly similar to putative p150 [H.sapiens]	
301390	N32264	Hs_44465	EST	EST	
789	D38971	Hs_72851	Human mRNA for KIA0217 gene partial cds		
4386	U40622	Hs_21523	DNA repair protein XRCC4		
31564	N51193	Hs_80310	ESTs		
132337	A443971	Hs_142495	ESTs Weekly similar to III ALU SUBFAMILY J [H.sapiens]		
4157	U28711	Hs_72879	Human oxytetracycline tetracycline growth factor receptor (CGR-1) mRNA complete cds		
20710	L37318	Hs_123074	Human oxytetracycline tetracycline growth factor receptor (CGR-2) mRNA complete cds		
2123	U40396	Hs_44396	Human sapiens guanylyl cyclase (RGC-2) mRNA complete cds		
26526	Hs_29595	Hs_48729	Homo sapiens (clone 22271) mRNA fragment		
6479	A342402	Hs_48729	ESTs		
18153	Hs_16553	EST - X91653	ESTs		
11989	A320070	Hs_24963	ESTs		
37603	A445864	Hs_102946	ESTs		
34004	A337146	Hs_90719	EST		
35854	A443260	Hs_87904	ESTs		
28644	D12163	Hs_103262	ESTs		
35194	A447969	Hs_96892	ESTs		
42777	Hs_173786	Hs_100592	ESTs		
40604	N33893	Hs_23578	Homo sapiens KIA00429 mRNA complete cds		
39713	U16281	Hs_60576	Human MDA-7 (mda-7) mRNA complete cds		
23759	Hs_176313	Hs_19732	ESTs		
21238	R90564	Hs_51919	Fluocytinogen-like protein		
2857	A58597	Hs_2177	Fluocytinogen-like protein		
34515	A4276721	Hs_103104	ESTs		
18008	A171195	Hs_30057	Homo sapiens clone 24749 and 24750 mRNA sequences		
13001	H02890	Hs_29835	ESTs		
39489	D00531	Hs_141905	ESTs		
23360	T58531	Hs_141905	ESTs		
34105	A4027123	Hs_130857	ESTs		
39121	A4456724	EST - RC_AA456724	EST - RC_AA456724		
35023	A4350541	Hs_106601	ESTs Moderately similar to URACIL-DNA GLYCOSYLASE 1 PRECURSOR [H.sapiens]		
26030	F16455	Hs_65028	ESTs Moderately similar to III ALU SUBFAMILY J WARNING ENTRY [III] [H.sapiens]		
3196	M08917	Hs_172923	ESTs		
9723	L43462	Hs_143065	Cytoplasmic binding protein		
23215	A0339610	Hs_1255	APOLIPROTEIN A1 REGULATORY PROTEIN-1		
2927	N28610	Hs_52223	Glycoprotein E		
39218	A4321330	Hs_114381	ESTs		
20088	N20054	Hs_20325	ESTs Weekly similar to putative p150 [H.sapiens]		
22557	R78722	Hs_23957	ESTs		
30265	N35115	Hs_44586	ESTs		
33713	Z39427	Hs_65748	ESTs		
41678	R00675	Hs_144133	EST		
16332	Hs_53596	ESTs			
12432	U01150	Hs_24485	Homo sapiens chromosome-associated polypeptide (RCAP) mRNA complete cds		
42390	A0098339	Hs_16050	ESTs Moderately similar to III ALU SUBFAMILY J WARNING ENTRY [III] [H.sapiens]		
39994	A4405485	Hs_98554	ESTs Weekly similar to I complex (cell-specific protein) [C.elegans]		
35953	A4407079	Hs_107479	ESTs		
35550	A4407079	Hs_107479	ESTs		
1585	L18920	Hs_36980	MELANOMA-ASSOCIATED ANTIGEN 2		
36258	A4423952	Hs_104045	ESTs Weekly similar to III ALU SUBFAMILY J WARNING ENTRY [III] [H.sapiens]		
37008	A4461512	Hs_22143	ESTs Weekly similar to III ALU CLASS C-V		
33000	W46891	Hs_53968	ESTs Weekly similar to poly(ADP-ribose) polymerase 1 [H.sapiens]		
41719	R92860	EST - RC_R92860	EST - RC_R92860		
39725	Hs_11323	Hs_6333	ESTs		
38725	Hs_11323	Hs_33753	ESTs		
27037	A4400168	Hs_48920	Homo sapiens Werner syndrome gene complete cds		
40827	N64011	Hs_54881	EST		
13182	N91109	Hs_80132	Human clone Jc1a unknown protein mRNA complete cds		
25934	AA163355	Hs_37104	SQUAMOUS CELL CARCINOMA ANTIGEN 1		
3406	S68396	Hs_109642	HKR-1		
3375	S02223	Hs_109642	HKR-1		

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## FIGURE 3 (CONT.)

37110	>10	AA451707	Hs.90246	ESTs	
38235	>10	AA186020	Hs.105203	ESTs	
22235	>10	DS4432	Hs.28536	ESTs	
787	>10	DS4480	Hs.82292	Human mRNA for KIAA0215 gene complete cds	
27787	>10	AA454860	Hs.44641	ESTs	
36845	>10	AA458199	Hs.103902	ESTs	
6095	>10	X69962	Hs.89764	Frigitia X mental retardation 1	
28323	>10	AA599939	Hs.50216	ESTs	
30207	>10	NS3920	Hs.44532	Human mRNA for debiquin	
30031	>10	NS3907	Hs.47120	EST	
6494	>10	X93869	Hs.55923	Human mRNA for UDP-GalNAc 4-epimerase	
36288	>10	AA421502	Hs.89402	ESTs	
37546	>10	AA459641	Hs.89433	ESTs	
4193	>10	U11116	Hs.77301	Human beta sarcoglycan A3b mRNA complete cds	
25609	>10	AA456800	Hs.141932	ESTs	
37777	>10	AA488781	Hs.15541	Human sapiens Jarid2 kinase mRNA complete cds	
36380	>10	M15353	Hs.79306	EST - RC_AA488781	
2243	>10	G305-HT0090	EST - HG20336-HT2090	Embryonic induction factor 4E	
978	>10	AA450077	Hs.102314	ESTs	
38045	>10	AA400527	Hs.119114	ESTs	
35495	>10	S80267	Hs.74171	Human tyrosine kinase	
3222	>10	R53187	Hs.21320	ESTs	
32740	>10	T92950	Hs.91077	ESTs	
5802	>10	X35544	Hs.36900	CYCLOCAMP-DEPENDENT TRANSCRIPTION FACTOR ATF-1	
37057	>10	AA484331	Hs.124618	ESTs	
34107	>10	AA050469	Hs.96297	ESTs	
34391	>10	AA332703	EST - RC_AA332703	ESTs	
33301	>10	W073863	Hs.58174	ESTs	
30790	>10	NS2935	Hs.47550	EST	
38172	>10	AA487424	EST - RC_AA487424	ESTs	
24915	>10	YEL0034	EST - YEL0034	EST - RC_AA455248	
37482	>10	AA455248	Hs.65	Prostaglandin E receptor 3 (subtype EP3) (alternative products)	
785	>10	D80996	EST - AA343375	EST - AA343375	
7785	>10	AA433075	Hs.34712	EST	
14708	>10	DF5388	Hs.6592	ESTs	
34070	>10	AA198458	Hs.75530	MITOTIC KINESIN-LIKE PROTEIN-1	
8041	>10	X87155	Hs.87345	AFPK-HUNTFRAM1507_5	
33890	>10	HUNTFRAM1507	Hs.58940	ESTs	
32277	>10	AA338683	Hs.58940	ESTs	
26558	>10	AA148530	EST - RC_AA148530	ESTs	
25801	>10	R55623	Hs.26434	ESTs	
32258	>10	AA300015	Hs.90961	DNA polymerase gamma	
34554	>10	N98926	Hs.55209	ESTs Moderately similar to DNAPOLYMERASE PROTEIN (H sapiens)	
32034	>10	U61145	Hs.77256	Human enhancer of zeste homolog 2 (EZH2) mRNA complete cds	
4787	>10	L07541	Hs.8990	Replication factor C (activator 1) 3 (RBC)	
1884	>10	F04915	Hs.22225	ESTs	
18718	>10	AA150359	Hs.7786	Human TAR DNA-binding protein-43 mRNA complete cds	
11121	>10	AA487207	EST - RC_AA487207	ESTs	
38187	>10	N21147	Hs.121688	ESTs	
40427	>10	N21140	Hs.91541	ESTs Highly similar to TUBULIN GAMMA CHAIN [Euplexis octocornutus]	
40444	>10	T61116	Hs.90327	ESTs	
32835	>10	R44707	Hs.22857	ESTs	
21546	>10	U38783	Hs.12639	ESTs	
4306	>10	AA488887	Hs.142639	Human sapiens palmitoyl-CoA:PE transferase	
38211	>10	X83388	Hs.78653	URACIL-DNA GLYCOSYLASE 1 PRECURSOR	
8438	>10	AA609215	EST - RC_AA609215	ESTs	
38658	>10	R20970	Hs.21388	ESTs	
21412	>10	AA42845	Hs.58885	EST	
38981	>10				

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## FIGURE 3 (CONT.)

35380	>10	A4309545	Hs.141444	ESTs	
4545	>10	U99108	Hs.29735	Human sapiens mRNA for TRAF5 complete cds	
41954	>10	R79437	Hs.2001	THROMBOXANE-A SYNTHASE	
41163	>10	R09178	Hs.20116	ESTs	
34400	>10	A435400	Hs.104336	ESTs	
33822	>10	A4411144	Hs.104788	ESTs	
40805	>10	N89738	Hs.125028	ESTs	
28828	>10	A280641	Hs.40128	ESTs Highly similar to 60S RIBOSOMAL PROTEIN L35 (Rattus norvegicus)	
3789	>10	U10690	Hs.37108	Human MAGE-5a antigen (MAGE5a) gene complete cds	
41752	>10	R97063	Hs.102020	ESTs	
33302	>10	C14644	Hs.12136	ESTs	
4680	>10	U55766	Hs.54485	Human Rev interacting protein Rip-1 mRNA complete cds	
36576	>10	A4459810	Hs.98592	EST - RC_H88296	
40204	>10	H82296	Hs.30980	EST	
10184	>10	H10393	Hs.30980	EST	
38371	>10	A430728	Hs.90438	EST - RC_A430728	
28240	>10	AQ32282	Human mRNA for KIAA0152 gene complete cds		
8963	>10	HUNTFRRM11507	AFFX-HUNTFRRM11507_M		
34575	>10	A3280738	Hs.128679	ESTs	
33522	>10	A3399710	Hs.87195	H. sapiens RNA for CLCN3	
1210	>10	HG37-HT37	EST - HG37-HT37		
22793	>10	R96208	Hs.35533	ESTs	
36052	>10	A417027	Hs.104787	EST	
26574	>10	A276504	Hs.88629	ESTs	
31818	>10	N8774	Hs.2223	Human sapiens mRNA for KIAA0392 gene partial cds	
33197	>10	A338120	Hs.97504	ESTs	
17600	>10	A4130598	Hs.71331	ESTs	
37879	>10	A447898	Hs.106360	ESTs Highly similar to RING CANAL PROTEIN (Drosophila melanogaster)	
4962	>10	U84337	Hs.95838	Human hemodexin-containing protein (HANT) mRNA complete cds	
21922	>10	A4485928	Hs.88555	ESTs Weakly similar to LON (H. multiseptus)	
28700	>10	A428197	Hs.89002	EST	
34182	>10	A4467501	Hs.112339	ESTs	
22593	>10	R19777	Hs.29997	EST	
35049	>10	AQ350357	Hs.22597	ESTs	
40063	>10	H73466	Hs.79086	MITOCHONDRIAL 60S RIBOSOMAL PROTEIN L3	
7286	>10	A405961	Hs.29523	ESTs	
37615	>10	A4459101	Hs.78337	Human serine/threonine kinase mRNA partial cds	
17541	>10	A4137459	Hs.108788	ESTs	
19949	>10	H72853	Hs.124151	ESTs	
4477	>10	U45890	Hs.37137	Human LAP-like protein (L.P. mRNA complete cds)	
20916	>10	A4311393	Hs.47378	ESTs	
34188	>10	A4286300	Hs.120234	ESTs	
37453	>10	A4454610	Hs.96139	ESTs	
22229	>10	H46459	Hs.38232	Human mRNA for KIAA0188 gene complete cds	
40760	>10	N57827	Hs.120777	ESTs Weakly similar to ELL (H. multiseptus)	
5149	>10	U97918	Hs.12246	Human neelin (RELN) mRNA complete cds	
42773	>10	LOC6048521	EST - YEL01601MS21		
32139	>10	R43183	Hs.85004	ESTs	
33556	>10	V80705	Hs.431	Murine leukemia viral (cmv-1) oncogene homolog	
36739	>10	A4435910	EST - RC_A4435910		
31310	>10	N86331	Hs.49285	EST	
28545	>10	A4278979	Hs.85847	ESTs	
21902	>10	R43322	Hs.22891	EST	
23525	>10	A4184464	Hs.28417	ESTs Weakly similar to CYCLIC-AMP-DEPENDENT TRANSCRIPTION FACTOR ATF-8 (H. sapiens)	
29344	>10	H88839	Hs.30782	EST	
1346	>10	G4746-HT5158	EST - HG4746-HT5158		
38374	>10	A4413204	Hs.104732	EST	
216	>10	D13540	Hs.22859	PROTEIN-TYROSINE PHOSPHATASE 2C	
28100	>10	A4242653	Hs.5977	Human mRNA for KIAA0391 gene complete cds	
41593	>10	R64129	Hs.143745	ESTs	

## FIGURE 3 (CONT.)

42290	>10	T95105	Hs.142870	ESTs	
6713	>10	Y05884	Hs.23117	EST - Y05884	
6478	>10	X91645	Hs.42636	ESTs Weakly similar to put alpha-extended 3'-untranslated region	
33377	>10	V01219	Hs.35481	EST	ESTs Weakly similar to F4686.7 [C. elegans]
39329	>10	C20787	Hs.50273	ESTs	
31619	>10	N73449	Hs.49407	ESTs	
28718	100	AA323576	Hs.100469	Human AF-6 mRNA complete cds	
21558	100	R33112	Hs.15269	ESTs	
40113	100	H78003	Hs.15269	ESTs	
10001	100	AA089265	Hs.8922	ESTs Weakly similar to PROBABLE UBIQUITIN CARBOXYL-TERMINAL HYDROLASE R0E11.3 [C. elegans]	
37491	100	AA553239	Hs.87630	ESTs Highly similar to CHROMOSOME CONDENSATION PROTEIN DPY-27 [Caenorhabditis elegans]	
33900	99	T95789	Hs.17689	ESTs	
254	99	D14637	Hs.21892	Human mRNA for KIAA0101 gene complete cds	
6805	99	Z29331	Hs.28505	Ubiquitin-conjugating enzyme E2H (homologous to yeast UBC6)	
28693	99	H07819	Hs.41453	ESTs	
28482	99	AA282491	Hs.47222	ESTs	
23123	99	T25306	Hs.13585	EST	
26325	99	AA278392	Hs.43881	ESTs	
13110	99	AA433840	Hs.19714	EST	Human sapiens mRNA for high mobility group protein HMGB2
34653	97	AA239784	Hs.36641	EST	
39432	97	D51691	Hs.82355	Phosphatidylcholine transferase phosphatidylcholine synthetase phosphatidylcholine synthetase	
31372	97	H68845	Hs.158910	ESTs Weakly similar to HLA CLASS B WARNING ENTRY III [H. sapiens]	
21112	96	R01170	Hs.112356	ESTs	
31572	96	N71284	Hs.110324	ESTs	
17903	96	AA190259	Hs.72354	EST	
20747	96	N68842	Hs.16398	ESTs	
4678	96	U52306	Hs.78619	ESTs	Human sapiens gamma-glutamyl hydrolase (GGH) mRNA complete cds
34063	96	AA351587	Hs.10801	ESTs	Human sapiens mRNA for KIAA0330 protein partial cds
39094	95	AA820639	Hs.112264	ESTs	
3888	95	D15128	Hs.36570	ESTs	Human beta-12-N-acetylglucosaminyltransferase II (NGAT2) gene complete cds
39366	95	D12194	Hs.33569	ESTs	
7874	94	AA303742	Hs.33087	ESTs	
4182	94	U31089	Hs.121439	ESTs	Human DP proteasome receptor (PTGDR) mRNA partial cds
4507	94	U47050	Hs.24552	ESTs	Human putative calcium influx channel (hpc3) mRNA complete cds
39606	94	AA402227	Hs.87345	ESTs Moderately similar to Nucleomodulin (Nucleomodulin)	
4870	94	U70662	Hs.23442	ESTs	Human nuclear factor I-62 (NF162) mRNA complete cds
19829	93	H58813	Hs.37929	EST	
14537	93	T40145	Hs.21821	ESTs	
17336	93	AA099555	Hs.41175	ESTs	
42541	93	N30180	Hs.101459	ESTs	
23496	92	H85434	Hs.40672	EST	
29943	92	N24780	Hs.43993	ESTs	Moderately similar to III ALU SUBFAMILY J WARNING ENTRY III [H. sapiens]
17897	92	AA159633	Hs.72835	EST	
21320	91	R11873	Hs.19957	ESTs	
13853	91	AA478917	Hs.34627	ESTs	Weakly similar to No definition line found [C. elegans]
30539	91	N49072	Hs.59868	ESTs	
32778	91	W022663	Hs.55331	EST	
20380	91	AA37012	Hs.80354	EST	
15888	91	X35632	Hs.88870	ESTs	Human Abi interactor 2 (Abi-2) mRNA complete cds
40812	90	N03419	Hs.83389	ESTs	
800	90	D80070	Hs.96	ESTs	ATL-derived PMA-responsive (APR) peptide
22074	90	R87160	Hs.33665	ESTs	
40807	90	N82895	Hs.58393	ESTs	TRANSCRIPTION INITIATION FACTOR IIF BETA SUBUNIT
15244	89	W00904	Hs.8037	ESTs	
32296	89	R57075	Hs.3074	ESTs	Zinc finger protein X-linked
18259	89	AA206467	Hs.82469	ESTs	
19652	89	H47391	Hs.33947	ESTs	
41807	88	R87988	Hs.82787	ESTs	CLEAVAGE SIGNAL-1 PROTEIN
2548	88	M21897	Hs.81584	ESTs	Phorbol factor 4
7736	88	AA331311	Hs.108031	ESTs	Human tyrosyl-tRNA synthetase mRNA complete cds

## FIGURE 3 (CONT.)

34490	AA02354	Hs.111395	ESTs	
38558	AA59477	Hs.103345	ESTs	
7528	AA148543	Hs.5316	ESTs	
39938	HS454	EST - RC_H5454		
25111	AA020787	Hs.110281	ESTs	
21855	R38239	Hs.23278	EST	
39663	HM4756	Hs.109648	ESTs	Highly similar to NADH-UBIQUINONE OXIDOREDUCTASE B17 SUBUNIT [Bot taenia]
1042	G2510-HT266	EST - HG2510-HT266		
32230	R77776	Hs.18103	ESTs	
25382	AA059007	Hs.61128	ESTs	
27074	AA001475	Hs.39733	ESTs	Weakly similar to C2831.3 [C.elegans]
3955	U8259	Hs.3078	MHC class II transactivator	
4659	U70322	Hs.82825	Human tenascin (TRN) mRNA complete cds	
3315	HA14123	EST - HA14123_p01		
37253	AA448357	Hs.17731	ESTs	
3824	F10836	Hs.101224	ESTs	
22713	T40891	Hs.8330	ESTs	
2795	MS4995	Hs.2184	Connective tissue activation peptide III	
41154	R07496	Hs.141394	ESTs	
32479	T16282	Hs.75189	WEE1-LIKE PROTEIN KINASE	
41251	R28279	Hs.71848	Human clone 23548 mRNA sequence	
19081	H05701	Hs.27948	ESTs	Weakly similar to RHOMBOTIN-1 [H.asplens]
21098	R05545	Hs.19530	ESTs	
14723	D58894	Hs.34782	ESTs	
37154	AA47668	Hs.77204	Human CENP-F kinetochore protein mRNA complete cds	
8068	AA313397	Hs.133101	ESTs	Highly similar to HYPOTHETICAL B4.7 KD PROTEIN ZK1098.1 [Caenorhabditis elegans]
7485	AA125547	HL61588	ESTs	
16501	AA028969	Hs.61453	ESTs	
34527	AA275091	Hs.194420	ESTs	
8700	Y07887	Hs.38842	H.asplens mRNA for Pdx1 isoform 1	
2832	MS4660	Hs.81728	Human T5-ND antigen (P4-Scl) mRNA complete cds	
11188	AA172372	Hs.26628	ESTs	
42253	T95333	Hs.122130	ESTs	Weakly similar to coded for by C. elegans cDNA yk11098.3 [C.elegans]
5443	X02530	Hs.2248	Interferon (gamma)-induced cell line protein 10 from	
40537	N70607	Hs.142450	ESTs	
23371	T59305	EST - RC_T59305		
28272	AA325981	Hs.87899	ESTs	Weakly similar to KDC11.10 gene product [C.elegans]
17306	AA080201	Hs.82702	ESTs	
18487	AA233795	Hs.65528	ESTs	
235	D13644	Hs.140933	Human mRNA for KIAA0019 gene complete cds	
24525	Z35347	Hs.118338	ESTs	
7528	AA248884	EST - AA248884		
32142	R31715	Hs.123918	Homo sapiens clone 24540 mRNA sequence	
39087	AA020405	Hs.112860	ESTs	
6235	X78416	Hs.3155	C8a9in alpha S1	
28517	H88261	Hs.41118	ESTs	
28575	C21104	Hs.10778	Homo sapiens STAT-induced STAT inhibitor-2 mRNA complete cds	
39344	C21034	Hs.78822	ESTs	Weakly similar to Interferon factor alpha 2B gamma subunit [R.norvegicus]
18951	H00580	Hs.28689	ESTs	
18376	H00815	Hs.24227	ESTs	
36023	AA328925	Hs.80057	ESTs	
19830	H58911	Hs.26645	ESTs	
13247	AA418681	Hs.87383	ESTs	
36814	AA449238	Hs.26638	ESTs	
2192	AA431466	Hs.107319	ESTs	
33018	L48211	Hs.29254	Homo Sapiens angiotensin II receptor gene complete cds	
17215	W48577	Hs.41716	H.asplens mRNA for ESMA-1 protein	
34684	AA093044	Hs.144225	ESTs	
40614	AA311881	Hs.98700	EST	
	N39257	Hs.99281	ESTs	

## FIGURE 3 (CONT.)

36295	77	AA424534	Hs.96415	ESTs	
19564	77	H35833	Hs.32638	ESTs	
16914	77	AA058865	Hs.23744	ESTs	
35967	76	AA412694	Hs.6891	Human splicing factor SRP45-2 (SRP45) mRNA complete cds	
21672	76	R38835	Hs.12328	ESTs	
19918	76	H87837	Hs.14698	ESTs	
10511	76	AA024462	Hs.9029	ESTs highly similar to KERATIN TYPE I CYTOSKELETAL 14 (Homo sapiens)	
17721	76	AA136590	Hs.71711	ESTs	
42302	76	T61350	Hs.137561	EST	
26134	76	AA243763	Hs.87694	ESTs	
19766	76	F06497	Hs.12755	ESTs	
34492	75	AA262499	Hs.96	ATL-derived PMA-responsive (APR) peptide	
270	75	D14822	EST - D14822		
35975	74	AA412738	Hs.3688	ESTs	
29842	74	N21688	Hs.43050	ESTs	
35389	74	AA399155	Hs.97558	ESTs	
19379	74	H8477	Hs.124237	ESTs	
5793	74	X54942	Hs.83758	CDK2B protein kinase 2	
19978	74	H87770	EST - RC_H87770		
1260	74	GA126-HT4396	EST - HC4126-HT4396		
31571	74	H71250	Hs.52004	ESTs	
22765	74	T96443	Hs.15553	ESTs Weakly similar to KIAA0376 [H.sapiens]	
35123	73	AA305627	Hs.87113	EST	
32252	73	AA489247	Hs.102234	ESTs	
32216	73	AA489861	Hs.154943	ESTs	
29418	73	H77516	EST - RC_H77516		
4834	72	U63541	Hs.20225	Human mRNA expressed in HCC-PC lines and Molt-4 proliferating cells partial sequence	
42504	72	W69803	Hs.101159	ESTs	
6111	72	X71125	Hs.79033	H.sapiens mRNA for glutamine cyclotransferase	
41773	72	T00024	Hs.28170	ESTs Weakly similar to ribosomal protein L7 [H.sapiens]	
9951	71	N71513	Hs.39328	ESTs	
28109	71	AA482512	Hs.9291	ESTs	
988	71	G2160-HT2230	EST - HC2160-HT2230		
29848	71	N22107	Hs.124215	ESTs	
30828	71	H50744	Hs.124025	ESTs	
22567	70	B77771	Hs.139445	ESTs	
9547	70	HQ3686	Hs.112013	ESTs	
11696	70	AA32864	Hs.20474	ESTs	
40584	70	N34870	Hs.102320	EST	
18035	70	D10923	Hs.137555	PROBABLE G PROTEIN-COUPLED RECEPTOR HM74	
6078	70	AA314048	Hs.259	Collagen type IV alpha 4	
28741	69	H69141	Hs.48876	FARNESYL-DIPHOSPHATE FARNESYLTRANSFERASE	
35069	69	AA233168	Hs.89113	ESTs	
23504	69	T11042	Hs.12066	ESTs	
40583	69	D18815	Hs.37286	Homo sapiens orphan nuclear hormone receptor BD73 mRNA 3' end	
31428	69	N85894	Hs.126029	ESTs	
39524	69	F01903	Hs.14732	MALATE DEHYDROGENASE	
34578	69	AA308037	Hs.111429	ESTs	
20978	68	AA369920	Hs.141503	Small inducible cytolysin AS (RAINTES)	
23936	68	T98920	Hs.13553	ESTs	
9326	68	D83277	Hs.69404	Mah (Drosophila) homeo box homolog 2	
19168	68	H11235	Hs.12887	ESTs highly similar to ACTIN-LIKE PROTEIN [Bos taurus]	
18195	68	AA194983	Hs.81781	Homo sapiens mRNA for osteostatin-inhibitory factor (OIF) complete cds	
27029	68	AA389930	Hs.84396	ESTs Weakly similar to KIAA0371 [H.sapiens]	
41289	68	R37265	Hs.106266	EST	
34511	67	AA276298	EST - RC_AA276298		
1596	67	J05914	EST - J05914		

## FIGURE 3 (CONT.)

29875	07	AA129757	Hs.54802	ESTs highly similar to 60S RIBOSOMAL PROTEIN L22 [Rattus norvegicus]
5314	07	X56088	Hs.1644	CYTOSCHROME P450 VII
13861	06	AA170145	Hs.25130	ESTs
28794	06	N20598	Hs.94288	ESTs
38333	06	C20910	Hs.23960	Cydn 31
3770	06	U09609	Hs.73090	Nuclear factor of kappa light polypeptide gene enhancer in B-cell 2 (p49/p100)
31831	06	N89884	Hs.91454	ESTs
33063	06	W53000	Hs.56155	Human sapiens clone 24431 mRNA sequence
20325	06	N33583	Hs.87878	ESTs Weakly similar to PROBABLE ES PROTEIN [Human papillomavirus type 56]
25599	05	AA225337	Hs.96498	ESTs
34354	05	AA114091	Hs.44898	Human (clone 8B1) B-cadherin mRNA complete cds
39749	05	H14088	Hs.107375	ESTs
42596	05	W83900	Hs.103033	ESTs
39006	05	F10243	Hs.140873	ESTs Weakly similar to III ALU CLASS B WARNING ENTRY III [H sapiens]
14817	05	C14880	Hs.37380	ESTs
27831	05	AA450044	Hs.40587	ESTs
34896	04	AA312551	Hs.96703	EST
27360	04	AA423596	Hs.85109	ESTs
20126	04	N22015	Hs.19457	ESTs
6663	04	N02931	Hs.82763	RETINOIC ACID RECEPTOR RET-2
30692	04	N51563	Hs.47044	ESTs
36472	04	AA426633	Hs.98504	EST
39770	04	H87652	Hs.24912	Human sapiens brachy-4 (BICD) mRNA complete cds
5578	04	H05628	Hs.8921	ESTs
22897	04	R89218	Hs.34256	ESTs
37308	04	AA451894	Hs.99244	EST
16101	04	AA021447	Hs.59952	EST
20029	03	N89789	Hs.18917	ESTs
36100	03	AA417740	Hs.96345	ESTs
15468	03	W02097	Hs.101864	Human sapiens clone 23711 unknown mRNA partial cds
36687	03	AA433136	Hs.85682	ESTs
30796	03	N52827	EST - RC_N52827	
32882	03	V07883	Hs.51080	ESTs
18072	03	AA180448	Hs.144900	EST
12231	03	AA199747	Hs.79225	Human mRNA for KIAA0096 gene partial cds
32182	03	AA489814	Hs.103289	EST
28185	03	AA486073	Hs.57362	ESTs
37454	02	AA454747	Hs.14934	ESTs
30618	02	AA431478	Hs.98739	ESTs
5082	02	U78524	Hs.75251	Human Gu binding protein mRNA partial cds
1441	02	J02983	Hs.785	Integrin alpha 2b (platelet glycoprotein IIb of IIb/IIIa complex antigen CD41B)
42105	01	T87710	Hs.105780	ESTs
6051	01	X83314	Hs.2704	Gluathione peroxidase 2 gastrointestinal
32570	01	T30222	Hs.4220	ESTs Weakly similar to tetrahydropteridine synthase [H. musculus]
32504	01	T17083	Hs.65721	EST
33335	01	T56004	Hs.10104	ESTs
10387	01	AA084458	Hs.18322	ESTs Weakly similar to III ALU SUBFAMILY J WARNING ENTRY III [H sapiens]
30683	01	N89023	Hs.48000	ESTs
14228	01	AA020285	Hs.98331	ESTs
29454	01	H31268	Hs.46353	EST
5158	01	T13153	Hs.25528	Human sapiens mRNA for lysine 3-monoxygenase
21248	01	R08071	Hs.14890	ESTs
21940	00	R44238	Hs.140889	ESTs
23066	00	F10327	Hs.85183	Human sapiens clone 23636 mRNA sequence
18774	00	F09609	Hs.12867	ESTs
38722	00	AA435512	Hs.96356	ESTs
18092	00	AA178845	Hs.73825	ESTs Moderately similar to rakshasa-8 [H. musculus]
22889	00	T18305	Hs.49248	ESTs
41745	00	R55985	Hs.142877	ESTs
8787	00	AA504037	Hs.96284	X-LINKED HELICASE II

## FIGURE 3 (CONT.)

20550	90	NS5013	Hs.35100	ESTs	
28470	59	AA282179	Hs.108470	ESTs	
18574	59	AA031926	Hs.139660	EST	
693	59	D80007	Hs.45026	Human mRNA for KIAA0185 gene partial cds	
4093	59	U25182	Hs.83343	Human antisense enzyme ACE37-2 mRNA complete cds	
1192	58	G3546-HT3744	Hs.83343	EST - HG5548-HT3744	
22956	59	T10248	Hs.4280	ESTs	
38723	59	AA435534	Hs.97483	EST	
2114	59	AA281137	Hs.108270	EST	
28872	59	X82466	Hs.144000	EST	
6662	58	Z38712	Hs.84541	ESTs	
42701	58	C21118	Hs.85430	ESTs	
28373	58	AA211901	Hs.22559	Human mRNA for KIAA0197 gene partial cds	
18390	58	D83781	Hs.58196	EST	
732	58	U91327	Hs.72323	Human platelet factor 4 variant 1 (PF4-var1) gene complete cds	
5330	58	W88720	Hs.98692	ESTs	
33503	58	M28157	Hs.106332	EST - RC_AA487495	
2553	58	AA286907	Hs.72323	Human platelet factor 4 variant 1 (PF4-var1) gene complete cds	
34705	58	W93559	Hs.106332	ESTs	
42665	58	AA487495	Hs.90273	Human chromosome segregation gene homolog CAS mRNA complete cds	
38160	58	U33786	Hs.55378	ESTs	
4244	57	W18354	Hs.21333	Retinal pigment epithelium-specific protein (RPE)	
32822	57	U18991	Hs.7859	ESTs	
38971	57	Z38501	Hs.2316	SRY (sex-determining region Y)-box 9 (campanetic dysplasia autosomal sex-reversal)	
6828	57	Z46629	Hs.130683	ESTs	
38726	57	AA608733	Hs.73383	Human mRNA for KIAA0029 gene partial cds	
38290	57	C14573	Hs.24596	ESTs	
11405	57	AA322231	Hs.8550	Home aspiens meltrin-L precursor (ADAM12) mRNA complete cds	
22538	57	R73367	Hs.1175	Home aspiens clone 22 mRNA alternative splice variant alpha-1 complete cds	
40747	57	N56872	Hs.43234	ESTs	
31596	57	N72094	Hs.50019	ESTs	
6329	58	X82279	Hs.85178	H. lepiens mRNA for M-phase phosphoprotein mpp9	
31578	58	N71361	Hs.23960	Cyclin B1	
33207	58	W70251	Hs.29613	ESTs	
2545	58	M25753	Hs.59432	ESTs	
22580	58	R79156	Hs.13819	ESTs	
33582	58	W81177	Hs.59699	CCO21 HOMOLOG	
28443	58	D82359	Hs.105576	ESTs	
8180	58	X74794	Hs.106333	Home aspiens clone 23622 mRNA sequence	
37387	58	AA479666	Hs.84713	Human huntingtin-interacting protein (HIP2) mRNA complete cds	
42515	55	V72716	Hs.82609	Hydroxymethylglutamate synthase	
4732	55	U58522	Hs.85370	ESTs	
3299	55	M95823	Hs.21899	Human mRNA for UDP-galactose translocase complete cds	
28220	55	AA598574	Hs.83313	ESTs	
746	55	D84454	Hs.78781	Peroxisomal membrane protein 1 (70KD Zellweger syndrome)	
38373	55	C21517	Hs.20321	ESTs	
3117	54	M81182	Hs.129849	ESTs	
21257	54	R09186	Hs.93163	ESTs	
31487	54	N89507	Hs.93163	ESTs	
21854	54	F03163	Hs.93163	ESTs	
38828	54	AA409595	Hs.103960	ESTs	
28823	54	N33366	Hs.53864	EST	
30925	53	N68285	Hs.144393	ESTs	
18091	53	H07664	Hs.27134	ESTs	
28209	53	AA491250	Hs.54990	ESTs	
9470	53	H46617	Hs.84487	ESTs	
9465	53	H30201	Hs.85434	ESTs	
28552	53	C20914	Hs.85434	ESTs	
27411	53	AA428137	Hs.85434	ESTs	

## FIGURE 3 (CONT.)

30615	53	N50556	Hs.47076	ESTa	
28313	53	AA599009	Hs.60866	ESTa	
33221	53	C20632	Hs.7972	ESTa	
29934	53	N24194	Hs.43531	ESTa	
1094	52	G2846-HT283	Hs.43531	ESTa	
39578	52	F09923	Hs.49610	ESTa	
11232	52	AA186804	Hs.25740	ESTa	Weakly similar to unknown [S cerevisiae]
2466	52	M11539	Hs.2421	ESTa	Human small proline rich protein (spr) mRNA clone 122
28643	52	AA371450	Hs.8342	ESTa	
40031	52	H07542	Hs.4206	ESTa	Weakly similar to SPERNATID-SPECIFIC PROTEIN T2 [Sepa effluvia]
6035	52	AA35116	Hs.123781	ESTa	ESTa
29793	52	N20593	Hs.104156	ESTa	Weakly similar to weak similarity to procollagen alpha chain 1(V) chain [C. elegans]
34109	51	AA210722	Hs.39399	ESTa	Weakly similar to weak similarity to procollagen alpha chain 1(V) chain [C. elegans]
26408	51	AA258177	Hs.22184	ESTa	
19263	51	H16054	Hs.27194	ESTa	
24596	51	Z38810	Hs.11171	ESTa	Haspenn mRNA for apoptosis specific protein
28589	51	C11245	Hs.109538	ESTa	Pregnancy-specific beta-1 glycoprotein 6
5854	51	X17098	Hs.47339	ESTa	
30710	51	N31781	Hs.80028	ESTa	
35785	51	AA261617	Hs.4610	ESTa	
28560	51	AA336480	Hs.78996	ESTa	Proliferating cell nuclear antigen
2351	51	M15796	Hs.100285	ESTa	
30262	51	N35063	Hs.44690	ESTa	Human asplens clone 24738 mRNA sequence
41782	51	T03896	Hs.98906	ESTa	
39710	51	AA344411	Hs.112359	ESTa	
39090	51	AA309235	Hs.111805	ESTa	
42183	50	T7861	Hs.12639	ESTa	
18748	50	F09134	Hs.80003	ESTa	
35746	50	AA406063	Hs.97529	ESTa	
35356	50	AA399053	Hs.98500	ESTa	
36769	50	AA435750	Hs.81778	ESTa	Haspenn mRNA for M-phase phosphoprotein mpp9
39800	50	AA438666	Hs.32544	ESTa	
27585	50	AA443328	Hs.42979	ESTa	
18290	50	AA016145	Hs.38178	ESTa	ESTa
27117	50	AA405998	Hs.89980	ESTa	Weakly similar to MOESIN/ELAVIN/CRICKIN HOMOLOG [D. melanogaster]
4304	50	U0784	Hs.14158	ESTa	Eukaryotic translation initiation factor 3 (eIF-3) p38 subunit
33458	50	W06835	Hs.14158	ESTa	Human asplens mRNA for KIAA0036 protein complete cds
28933	50	AA382170	Hs.59975	ESTa	
12669	50	AA417030	Hs.5101	ESTa	Human asplens protein regulating cytokinesis 1 (PRC1) mRNA complete cds
28701	50	H07870	Hs.42478	ESTa	
20480	50	N52168	Hs.22970	ESTa	
8720	49	AA481218	ESTa	ESTa	AA481218
34228	49	AA282436	Hs.27621	ESTa	Human asplens remaporphin F homolog mRNA complete cds
14985	49	U15128	Hs.28572	ESTa	Human beta-12-N-acetylglucosaminyltransferase II (MGAT2) gene complete cds
18115	49	AA044420	Hs.49560	ESTa	
42506	49	V70074	Hs.103163	ESTa	
34781	49	AA287833	Hs.89668	ESTa	
11870	49	AA282687	Hs.20337	ESTa	
23211	49	T40859	Hs.8329	ESTa	
40811	49	N39135	Hs.106784	ESTa	Human asplens mRNA for KIAA0564 protein partial cds
42811	49	W87006	Hs.78440	ESTa	Human asplens putative RNA binding protein KOC (KOC) mRNA complete cds
39652	48	H03099	Hs.101618	ESTa	
17581	48	AA153395	Hs.71139	ESTa	
37239	48	AA449121	Hs.95210	ESTa	
18712	48	F04077	Hs.12381	ESTa	
30709	48	N5752	Hs.47304	ESTa	Weakly similar to synapse-associated protein 497-1 [D. melanogaster]
34179	48	AA237903	Hs.41107	ESTa	Highly similar to GTP-BINDING PROTEIN LEPA [Pseudomonas fluorescens]
21433	48	P22185	Hs.144123	ESTa	
38731	48	H11780	Hs.23606	ESTa	
31285	48	N66653	Hs.94161	ESTa	



## FIGURE 3 (CONT.)

2447	48	Z39106	Hs.27285	EST	
3132	48	N68515	Hs.42332	ESTs	
1265	48	G4187-RT1427	EST - HG4151-RT1427		
1106	48	G281-RT13127	EST - HG281-RT13127		
1812	48	AA196506	ESTs		
3487	48	AA351753	Hs.40323	Homo sapiens spleen mitotic checkpoint BUB3 (BUB3) mRNA complete cds	
34822	48	AA381468	Hs.85504	ESTs	
34762	48	AA287834	Hs.105905	ESTs	
11595	48	AA243819	Hs.32539	ESTs	
8295	48	AA405092	Hs.125014	ESTs	
17822	48	AA131584	Hs.71435	ESTs Weakly similar to SCF1 PROTEIN [Saccharomyces cerevisiae]	
35781	48	AA406335	Hs.95187	ESTs	
34754	47	A287242	Hs.81848	Human mRNA for KIAA0078 gene complete cds	
23337	47	T17291	Hs.8810	EST	
37687	47	AA480318	Hs.110165	ESTs Highly similar to 60S RIBOSOMAL PROTEIN L28 [Rattus norvegicus]	
11569	47	AA328786	Hs.26076	ESTs	
36822	47	AA395967	Hs.141962	ESTs	
5137	47	U7296	Hs.74642	Oxydoperoxidase S-acyltransferase (E2 component of pyruvate dehydrogenase complex)	
25038	47	AA010065	Hs.83758	CD226 protein kinase 2	
18238	47	H16567	Hs.21253	ESTs	
32503	47	T17045	Hs.90283	Collagen type I alpha-2	
3278	47	N64035	Hs.34499	SODIUM CHANNEL PROTEIN BRAIN II ALPHA SUBUNIT	
9696	47	L38961	Hs.89650	Integral transmembrane protein 1	
35400	47	AA395591	Hs.97881	Homo sapiens putative DNA methyltransferase (DNMT2) mRNA complete cds	
35246	47	AA395367	Hs.97817	EST Weakly similar to HSP60 protein [M. musculus]	
36387	47	AA426270	Hs.85498	ESTs	
21509	47	R27314	Hs.23820	ESTs	
31381	47	N67889	Hs.49397	ESTs	
26723	47	AA328781	Hs.95321	ESTs Highly similar to PRE-MRNA SPLICING FACTOR RNA HELICASE PRP28 [Saccharomyces cerevisiae]	
36326	47	AA425151	Hs.79310	Human GAP SH3 binding protein mRNA complete cds	
17409	47	AA113136	EST - RC_AA113136		
4908	47	U71566	Hs.84148	Human mitogen-activated kinase kinase 5 (MAPKK5) mRNA complete cds	
35994	46	N49687	Hs.48624	ESTs	
32886	46	AA498647	Hs.112019	ESTs Weakly similar to LINE-1 REVERSE TRANSCRIPTASE HOMOLOG [Nucleobus coding]	
13073	46	AA433960	Hs.22330	ESTs	
40435	46	N21814	Hs.100335	Homo sapiens basic-leucine zipper transcription factor MafG (MAFG) mRNA complete cds	
14474	46	AA009427	Hs.24184	ESTs Moderately similar to IIII ALU SUBFAMILY SC WARNING ENTRY IIII [H. sapiens]	
38213	46	AA488647	Hs.111390	ESTs Weakly similar to putative p150 [H. sapiens]	
5312	46	U80716	Hs.79187	Human cell surface protein HCAR mRNA complete cds	
24225	46	W70326	Hs.18506	ESTs	
35588	46	AA401750	Hs.87343	EST	
28739	46	H98626	Hs.42710	EST	
7203	46	AA050096	EST - AA050096		
2157	46	L41839	Hs.89403	Homo sapiens protein-tyrosine kinase EphA2v (EPH2) mRNA complete cds	
32688	46	R11510	Hs.50934	ESTs	
5085	46	AA314679	Hs.105494	ESTs Weakly similar to LITHOSTATHINE 1 BETA PRECURSOR [H. sapiens]	
224	46	D13833	Hs.77885	Human mRNA for KIAA0038 gene complete cds	
34008	46	AA189781	Hs.80961	DNA polymerase gamma	
33656	46	W65477	Hs.50582	ESTs	
34065	46	AA193517	Hs.111190	ESTs Weakly similar to IIII ALU SUBFAMILY J WARNING ENTRY IIII [H. sapiens]	
6028	45	X06503	Hs.90011	Adrenyloxydase synthase	
4186	45	U23463	Hs.108102	Cytochrome B6	
40262	45	H93562	Hs.100624	ESTs	
22887	45	R88208	Hs.34151	ESTs	
41069	45	N93969	Hs.91107	H. sapiens mRNA for HFA1 protein	
5284	45	AA401334	Hs.106941	ESTs	
27588	45	AA443187	Hs.41181	ESTs	
35882	45	AA412047	Hs.122578	ESTs	
34478	45	AA365880	Hs.110736	Human bumetanide-sensitive Na-K-Cl cotransporter (NKCC1) mRNA complete cds	
15921	45	Y12065	Hs.5092	Homo sapiens mRNA for nucleolar protein hn056	

## FIGURE 3 (CONT.)

11279	44	AA195398	Hs.24641	ESTs	Highly similar to DOLICHYL PHOSPHATE BETA-GLUCOSYLTRANSFERASE [Saccharomyces cerevisiae]
39222	44	AA821348	Hs.110042	ESTs	
34428	44	AA356528	Hs.121002	ESTs	
8771	44	AA491188	Hs.62273	ESTs	
22153	44	RS3881	Hs.108505	Homo sapiens mRNA from chromosome 8p11-22 clone A-3-A	
7858	44	AA353022	Hs.81854	ESTs	
19902	44	H66736	Hs.34180	ESTs	
9276	44	D62374	Hs.131854	ESTs	
10716	44	AA353319	Hs.3951	ESTs	
13153	44	AA42765	Hs.20453	ESTs	Highly similar to G2/MITOTIC-SPECIFIC CYCLIN B2 [Mesocricetus auratus]
5690	44	X17620	Hs.118038	NUCLEOSIDE DIPHOSPHATE KINASE A	
35102	44	AA371509	EST - RC_AA371509	ESTs	
17883	44	AA188228	Hs.72782	ESTs	
24862	43	HUNTERBAM11507	AFEX-HUNTERBAM11507_5	ESTs	
31860	43	N74438	Hs.59492	ESTs	
27165	43	AA10238	Hs.65906	ESTs	
28731	43	D20981	Hs.62453	EST	
23348	43	AA08752	Hs.71869	ESTs	
18355	43	AA08752	Hs.40515	ESTs	Weakly similar to IIIA11 SUBFAMILY SP WARNING ENTRY [III] [H sapiens]
33036	43	W46880	Hs.39972	ESTs	Weakly similar to transcription LTR2 reverse transcriptase homolog [H sapiens]
30180	43	N3144	Hs.44441	ESTs	
35591	43	AA01758	Hs.79041	ESTs	Weakly similar to IIIA11 SUBFAMILY SQ WARNING ENTRY [III] [H sapiens]
25340	43	AA054554	Hs.95373	EST	
28106	43	AA485084	Hs.110462	ESTs	
38690	43	AA00121	Hs.111487	ESTs	
22023	43	N26855	Hs.5558	ESTs	Moderately similar to IIIA11 SUBFAMILY SQ WARNING ENTRY [III] [H sapiens]
10251	43	R76185	Hs.18171	ESTs	Weakly similar to C01H67 [C.elegans]
12884	43	AA417558	Hs.25206	ESTs	
31036	43	N73680	Hs.57435	Natural resistance-associated macrophage protein 2	
20769	43	N67277	Hs.9403	ESTs	
1572	42	K01884	EST - K01884	ESTs	
10923	42	AA116028	Hs.5329	ESTs	
34380	42	AA252414	Hs.104330	ESTs	
10132	42	R35733	EST - R35733	ESTs	
18428	42	AA028111	Hs.61859	ESTs	
25148	42	AA028356	Hs.108108	ESTs	
28730	42	D20938	Hs.6558	ESTs	Moderately similar to IIIA11 SUBFAMILY SQ WARNING ENTRY [III] [H sapiens]
38995	42	R64321	Hs.17381	ESTs	
42379	41	W37999	Hs.103018	ESTs	
28050	41	M239474	Hs.75393	Add phosphatase 1 soluble	
8827	41	AF008442	Hs.5409	Human recombination activating protein (RAG-1) gene complex cds	
13379	41	AA448741	Hs.4028	Homo sapiens RNA polymerase I subunit hRPA38 mRNA complete cds	
5134	41	U79353	Hs.60802	ESTs Weakly similar to AE-9 PROTEIN [H sapiens]	
2628	41	M29581	Hs.2077	Human clone 23548 mRNA sequence	
38005	41	AA478969	Hs.105624	Zinc finger protein 8 [Ciona HC.18]	
36575	41	AA431085	Hs.98706	ESTs	
18296	41	AA213820	Hs.48301	ESTs Weakly similar to putative p150 [H sapiens]	
29531	41	H88953	EST - RC_H88953	ESTs	
143	41	HUNTERBAM11507	AFEX-HUNTERBAM11507_5	ESTs	
10970	41	AA172930	Hs.5285	ESTs	
25536	41	AA152005	Hs.2248	Interferon (gamma)-induced cell line protein 10 from	
19735	41	H53038	Hs.36710	EST	
40711	41	N53584	Hs.108159	ESTs	
4149	41	U32898	Hs.2297	PAS (recombination activating gene) clone 1	
5787	41	X33795	Hs.18528	MULTIFUNCTIONAL PROTEIN ADE2	
5503	41	X33222	Hs.63328	Stranmylin	
20370	41	N45953	Hs.6150	ESTs highly similar to HYPOTHETICAL 478 KD PROTEIN B0260.9 IN CHROMOSOME III [Caenorhabditis elegans]	

## FIGURE 3 (CONT.)

456	41	D38145	Hs.61333	Prostaglandin 12 (prostaglandin) synthase
457	41	A0248406	Hs.19347	ESTs
458	40	H00161	Hs.64592	ESTs
459	40	V05409	Hs.59704	ESTs
460	40	A046968	Hs.62823	ESTs
461	40	H08778	Hs.13521	ESTs
462	40	A025893	Hs.10842	HK5-T1
463	40	U79247	Hs.90796	Human clone 23568 mRNA sequence
464	40	A034220	Hs.86505	ESTs
465	40	V06146	Hs.31962	ESTs
466	40	A027943	Hs.88871	ESTs
467	40	A026269	Hs.89843	Spain focus forming virus (SFV) proviral integration oncogene sp1
468	40	V42451	Hs.82290	ESTs
469	40	A038895	Hs.56159	ESTs Weakly similar to EBF6.2 gene product [C.elegans]
470	40	H21043	Hs.42932	ESTs
471	38	H91564	Hs.13540	ESTs
472	38	F09315	Hs.78582	Human sapiens mRNA for KIAA0583 protein partial cds
473	38	R39317	Hs.89403	Human sapiens protein-tyrosine kinase EPHB2 (EPH2) mRNA complete cds
474	38	A043321	Hs.101810	ESTs
475	38	A0419523	Hs.99819	ESTs Highly similar to PUTATIVE UBIQUITIN CARBOXYL-TERMINAL HYDROLASE C13A11.04C [Schizosaccharomyces pombe]
476	38	A021164	Hs.107213	ESTs
477	38	HUNTR02M1507	A021164	AFFX-HUNTR02M1507_3
478	38	A0115933	Hs.42223	ESTs
479	38	A0117267	Hs.144332	ESTs Highly similar to HYPOTHETICAL 37.7 KD PROTEIN Z688.3 IN CHROMOSOME II [Canis familiaris elegans]
480	38	Z61415	Hs.6823	ESTs Highly similar to BONE MORPHOGENETIC PROTEIN 1 PRECURSOR [Mus musculus]
481	38	A0211560	Hs.79656	ESTs
482	38	T08850	Hs.100703	ESTs
483	38	X02715	Hs.3057	Zinc finger protein 74 (C6432)
484	38	A058803	Hs.111496	ESTs
485	38	A025756	Hs.89445	ESTs
486	38	N46234	Hs.1334	MYB PROTO-ONCOGENE PROTEIN
487	38	A0500150	Hs.14366	ESTs
488	38	T01805	Hs.38084	Human sapiens mRNA for ST1C2 complete cds
489	38	A0487021	Hs.103703	EST
490	38	M27281	Hs.73793	Vascular endothelial growth factor
491	38	H75933	Hs.75901	Laminin receptor (216 epitope)
492	38	H61340	Hs.125010	ESTs
493	38	N74443	Hs.16247	ESTs
494	38	N48903	Hs.21892	Human sapiens mRNA for KIAA0589 protein partial cds
495	38	A001583	Hs.7869	ESTs
496	38	N02248	Hs.141609	EST
497	38	A046890	Hs.103135	ESTs
498	38	A0478604	Hs.7114	ESTs
499	38	N58379	Hs.102853	EST
500	38	A069943	Hs.37793	ESTs
501	38	R03333	Hs.21182	ESTs
502	38	A045074	Hs.110146	ESTs Weakly similar to 52-KD SS-A/Ro autoantigen [H.sapiens]
503	38	V09305	Hs.17154	Human sapiens mRNA for protein kinase Dyk4 partial
504	38	U01503FAM97935	A045074	AFFX-HUMISGFAM97935_MB
505	38	A021523	Hs.110832	ESTs
506	38	A045221	Hs.81688	ESTs
507	38	U01918	Hs.76329	Human placenta (D1033) mRNA complete cds
508	38	A027219	Hs.110826	Human sapiens CAGEF mRNA partial cds
509	38	A046907	EST - RC_A046907	
510	38	A0421260	Hs.4310	ESTs
511	38	W00130	Hs.103135	ESTs
512	38	A037357	Hs.18045	ESTs
513	38	D07716	Hs.90315	Human mRNA for KIAA0307 gene partial cds
514	38	A0180587	Hs.85432	ESTs
515	38	N07073	Hs.50473	ESTs

## FIGURE 3 (CONT.)

35377	3.7	AA39463	EST - RC_AA39463	ESTs	Human ARF-activated phosphatidylinositol-specific phospholipase D1a (pLID1) mRNA complete cds
22828	3.7	R98192	Hs.35028	ESTs	Colagen type XIX alpha 1
25240	3.7	AA039713	Hs.110408	ESTs	ESTs
11008	3.7	AA134289	Hs.15423	ESTs	ESTs Weakly similar to ASH1 [D.melanogaster]
4241	3.7	U36445	Hs.82387	ESTs	Human ARF-activated phosphatidylinositol-specific phospholipase D1a (pLID1) mRNA complete cds
28833	3.7	D59787	EST - RC_D59787	ESTs	Colagen type XIX alpha 1
37350	3.7	U55279	Hs.89457	ESTs	Colagen type XIX alpha 1
17463	3.7	AA122147	Hs.84691	ESTs	Colagen type XIX alpha 1
16854	3.7	AA035552	Hs.71622	ESTs	ESTs Weakly similar to KIAA0319 [H.sapiens]
3709	3.7	U07550	Hs.1197	ESTs	Heat shock 10 KD protein 1 (chaperonin 10)
1608	3.7	L00205	Hs.111759	ESTs	KERATIN TYPE II CYTOSKELETAL RC
24577	3.7	X62308	Hs.81625	ESTs	Human sapiens mRNA for KIAA0555 protein complete cds
31032	3.7	U89548	Hs.81251	ESTs	Human RNA binding protein EL-3 mRNA complete cds
4951	3.7	U89548	Hs.81251	ESTs	Human RNA binding protein EL-3 mRNA complete cds
37860	3.7	AA480225	Hs.93919	ESTs	ESTs
20418	3.6	H49209	Hs.32170	ESTs	ESTs
27955	3.6	AA170135	Hs.75887	ESTs	Human sapiens catenator protein (COPA) mRNA complete cds
7871	3.6	AA267423	Hs.126368	ESTs	ESTs
27606	3.6	AA443793	Hs.94781	ESTs	ESTs
24677	3.6	Z59338	Hs.21201	ESTs	ESTs Highly similar to POLIOVIRUS RECEPTOR HOMOLOG PRECURSOR [Mus musculus]
11070	3.6	AA148521	Hs.6759	ESTs	ESTs Weakly similar to putative p150 [H.sapiens]
9328	3.6	D59618	Hs.3386	ESTs	Human sapiens Imporin-alpha homolog (SRP gamma) mRNA complete cds
36828	3.6	AA35966	Hs.93857	ESTs	ESTs
17678	3.6	AA124275	Hs.134510	ESTs	Human HIV-1 tat element regulatory factor mRNA sequence from chromosome 3
38109	3.6	AA412126	Hs.13689	ESTs	ESTs Weakly similar to LIS-1 protein [H.sapiens]
34120	3.6	AA211615	Hs.104173	EST	ESTs
38152	3.6	AA468737	Hs.105465	ESTs	ESTs Weakly similar to Sm protein F
38463	3.6	AA504491	Hs.33164	ESTs	ESTs Weakly similar to contains similarity to CYP14-class zinc finger [C.elegans]
20064	3.6	H68653	Hs.10256	ESTs	ESTs
31756	3.6	H68152	Hs.49132	EST	ESTs
9713	3.6	L44336	Hs.76894	ESTs	Human sapiens mRNA for KIAA0323 protein partial cds
28622	3.6	D11837	Hs.29848	ESTs	EST - RC_AA481549
38657	3.6	AA481549	Hs.65357	EST	EST - RC_AA481549
28763	3.6	D43568	Hs.65357	EST	EST - RC_AA481549
16996	3.6	AA089038	EST - RC_AA089038	ESTs	ESTs Moderately similar to PROHIBITIN [H.sapiens]
28628	3.6	D11888	Hs.62386	ESTs	ESTs Moderately similar to PROHIBITIN [H.sapiens]
25604	3.5	AA148885	Hs.111710	ESTs	ESTs
2482	3.5	M22898	Hs.1546	ESTs	Tumor protein p53 (L1-Fraumeni syndrome)
14804	3.5	T83289	Hs.107147	ESTs	ESTs Highly similar to GEPHYRIN [Rattus norvegicus]
25285	3.5	AA043785	Hs.54649	ESTs	ESTs Weakly similar to CLEAVAGE STIMULATION FACTOR 64 KD SUBUNIT [H.sapiens]
13005	3.5	AA189437	Hs.20388	ESTs	EST - RC_T84593
42307	3.5	T86593	Hs.2012	ESTs	EST - RC_T84593
1544	3.5	J05068	Hs.2012	ESTs	TRANSCOBALAMIN I PRECURSOR
42339	3.5	V02072	Hs.20708	ESTs	ESTs Weakly similar to No definition line found [C.elegans]
42311	3.5	T97257	Hs.94560	ESTs	ESTs
2023	3.5	L34690	Hs.3323	ESTs	INITIATION FACTOR F-2 MITOCHONDRIAL PRECURSOR
4540	3.5	U46307	Hs.2359	ESTs	Human MAP kinase phosphatase (MKP-2) mRNA complete cds
33707	3.5	Z39297	Hs.3281	ESTs	Neurexin pertandin II
17220	3.5	AA053070	EST - RC_AA053070	ESTs	EST - RC_AA053070
24332	3.5	V65782	Hs.18339	ESTs	ESTs
35887	3.5	AA122657	Hs.88117	ESTs	ESTs
20158	3.5	N22635	Hs.18464	ESTs	ESTs Weakly similar to coded for by C. elegans cDNA Y52a10.5 [C.elegans]
8338	3.4	AA171152	Hs.5101	ESTs	Human sapiens protein regulating cytokinesis 1 (PRC1) mRNA complete cds
387	3.4	D25539	EST - RC_D25539	ESTs	EST - RC_D25539
12319	3.4	AA38109	Hs.20860	ESTs	ESTs
38279	3.4	AA489711	Hs.109260	ESTs	ESTs
15843	3.4	V61047	Hs.37437	ESTs	ESTs Highly similar to KINESIN-LIKE PROTEIN KIF4 [Mus musculus]
11218	3.4	AA180488	Hs.33748	ESTs	ESTs
15539	3.4	AA029328	Hs.11191	ESTs	Human mRNA for KIAA0073 gene partial cds
25203	3.4	T26561	Hs.92711	ESTs	ESTs

## FIGURE 3 (CONT.)

13038	34	AA465342	Hs.34045	ESTs	
25585	34	AA112389	Hs.107632	Hs(105170)	
34016	34	AA119148	Hs.73814	Human high-affinity copper uptake protein (HCTR) mRNA complete cds	
251	34	D14520	Hs.84728	Basic transcription element binding protein 2	
3778	34	U09848	Hs.383	Zinc finger protein 139 (clone pR2-37)	
24525	34	Z39409	Hs.8553	ESTs	
16558	34	AA035729	Hs.90398	Human mRNA for KIAA0128 gene partial cds	
16127	34	AA004669	Hs.39441	ESTs	
36653	34	AA432268	Hs.104910	ESTs	
28149	34	AA250824	Hs.60476	ESTs Weakly similar to ZINC FINGER PROTEIN 91 (H sapiens)	
4011	34	I205356	Hs.3280	Human cysteine protease M20 isoform alpha (M20) mRNA complete cds	
41001	34	N78844	Hs.3749	ESTs	
5660	34	X16396	Hs.37791	MAD-DEPENDENT METHYLENETETRAHYDROFOLATE DEHYDROGENASE	
19204	34	H11829	Hs.25790	ESTs	
42323	34	T98152	Hs.79432	Pinellin 2	
28978	34	AA342380	Hs.47232	ESTs	
22497	34	NS2565	Hs.30055	ESTs	
18276	34	H12455	Hs.13026	ESTs	
36267	34	AA424046	Hs.95385	ESTs	
32237	34	RS4728	Hs.85493	ONA-REPAIR PROTEIN XRCC1	
17365	34	AA101551	Hs.65900	ESTs	
15296	34	W19684	Hs.74284	ESTs Moderately similar to Similar to S. cerevisiae hypochloral protein L3111 (H. sapiens)	
17875	34	AA134084	Hs.44045	ESTs	
40332	34	H97565	Hs.108605	Human sapiens mRNA from chromosome 5q21-22 clone AA-3-A	
7219	34	AA055319	Hs.73278	Human sapiens protein phosphatase 2A B55-epsilon (PP2A) mRNA complete cds	
10006	34	NI1193	Hs.43133	Human sapiens mRNA for KIAA0035 protein complete cds	
33985	34	AA181560	Hs.61850	Human sapiens importin beta subunit mRNA complete cds	
3970	34	H51160	Hs.24437	Human sapiens sodium/myo-inositol cotransporter (SLC5A3) gene complete cds	
37251	34	AA458879	Hs.7256	ESTs	
886	34	DB8813	Hs.23846	Human mRNA for NG2 mRNA complete cds	
23650	34	T86253	Hs.16144	ESTs	
18367	34	AA224180	Hs.33332	ESTs Moderately similar to ovastin-specific protein (R. norvegicus)	
42494	34	W69395	Hs.100002	H. sapiens Nuclea gene (Clone T33)	
14310	34	AA598412	Hs.8739	ESTs Highly similar to HYPOTHETICAL TRP-ASP REPEATS CONTAINING PROTEIN IN PUTA-PT1 INTERGENIC REGION (Saccharomyces cerevisiae)	
18233	34	H12634	Hs.8104	ESTs	
12859	34	AA424406	Hs.31016	Human sapiens M982 protein spliced isoform 2 mRNA complete cds	
38385	34	AA424469	Hs.97849	ESTs	
21555	34	R33073	Hs.24595	EST	
13767	34	AA461024	Hs.118387	ESTs	
4738	34	U85768	Hs.15801	Human FX protein mRNA complete cds	
7258	34	AA073427	Hs.17296	ESTs	
17041	34	AA070384	EST - RC_AA070384	ESTs	
15504	34	Y25582	Hs.44131	ESTs	
23793	34	T99571	EST - RC_T99571	ESTs	
18214	34	AA198835	Hs.88031	ESTs	
7401	34	AA094800	Hs.55632	Human translation initiation factor eIF3 p56 subunit mRNA complete cds	
18912	34	F10913	Hs.12475	Human sapiens clone 23817 unknown mRNA partial cds	
36317	34	AA425083	Hs.50723	Human mRNA for KIAA0034 gene complete cds	
9410	34	H20443	Hs.31748	Human mRNA for TRES	
2148	34	L41390	EST - L41390	ESTs	
18683	34	F04258	Hs.36454	ESTs Highly similar to INORGANIC PYROPHOSPHATASE (R. solanum)	
33891	34	U18768/11507	AFK-HUMTFRM11507_M	AFK-HUMTFRM11507_M	
14435	34	AA608730	Hs.4192	ESTs Weakly similar to ELONGATION FACTOR 1 ALPHA (Gardia intestinalis)	
9584	34	H58128	Hs.41127	ESTs Highly similar to GTP-BINDING PROTEIN LEPA (Pseudomonas fluorescens)	
22061	34	R48216	Hs.24884	ESTs	
35786	34	AA102223	EST - RC_AA102223	ESTs	
37403	34	AA423813	Hs.128708	ESTs	
15786	34	H59689	Hs.89689	ALPHA-GALACTOSIDASE A PRECURSOR	
15840	34	X70944	Hs.131379	PTB-ASSOCIATED SPLICING FACTOR	

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## FIGURE 3 (CONT.)

7518	32	AA147144	EST - AA147144	
32335	32	R78248	Hs.109156 ESTs	
32366	32	M92439	Hs.87157 130 KD LEUCINE-RICH PROTEIN	
44002	32	U41387	Human Gu protein mRNA partial cds	
7681	32	A206983	Hs.104135 Homo sapiens mRNA for ORIM protein	
15675	32	W68649	Hs.9636 ESTs	
39590	32	F09281	Hs.106081 ESTs	
26853	32	A231921	Hs.44107 ESTs Weakly similar to putative p150 [H.sapiens]	
9803	32	H18237	Hs.21704 Transcription factor 12 (HTF4 helix-loop-helix transcription factor 4)	
27755	32	AA43444	Hs.8929 ESTs	
29953	32	N28011	Hs.33910 ESTs	
21350	32	R15646	Hs.21738 ESTs	
11951	32	A230628	Hs.24287 ESTs	
23930	32	T96890	Hs.123123 ESTs Weakly similar to Hs. ALU SUBFAMILY J WARNING ENTRY III [H.sapiens]	
30399	32	N45226	Hs.46495 EST	
22286	32	R59312	Hs.26841 ESTs	
13494	32	AA453431	Hs.21043 ESTs	
12900	32	AA427579	Hs.8347 ESTs	
22319	32	R60567	Hs.26787 ESTs	
31329	31	N66318	Hs.42179 ESTs	
31192	31	N64406	Hs.54174 ESTs	
11286	31	AA196512	Hs.25918 ESTs	
170	31	CO5596	Thymidylate synthase	
5307	31	U95649	Hs.83963 ESTs	
28106	31	A243133	Human non-histone chromosomal protein (NHC) mRNA complete cds	
11659	31	A231909	Hs.48915 Homo sapiens serine/threonine kinase (STAK) mRNA complete cds	
18177	31	H10984	Hs.12338 ESTs	
8389	31	AA453230	Hs.112013 ESTs	
34087	31	AA205125	Hs.1097 Protein serine/threonine kinase stl2	
14149	31	AA486965	Hs.138349 ESTs Weakly similar to BAP31 protein [H.sapiens]	
10167	31	R55078	Hs.25245 ESTs	
17350	31	AA102566	Hs.106645 ESTs	
47397	31	VA2928	Hs.103046 ESTs	
14935	31	T34828	Hs.82220 ESTs Weakly similar to CA BINDING PROTEIN BETA-2 CHAIN [H.sapiens]	
41873	31	R78518	Hs.101571 ESTs Weakly similar to GTP-binding protein nb10 [R.norvegicus]	
2750	31	U25990	Integrin beta 3 (platelet glycoprotein IIb antigen CD61)	
3190	31	M48808	Hs.131361 PYRUVATE DEHYDROGENASE E1 COMPONENT ALPHA SUBUNIT TESTIS-SPECIFIC FORM PRECURSOR	
17408	31	AA112979	Hs.48269 Homo sapiens mRNA for VRK1 complete cds	
598	31	D32531	Hs.3709 Homo sapiens mRNA for low molecular mass ubiquitin-binding protein complete cds	
29348	31	H69021	Hs.62394 ESTs	
14130	31	AA489041	Hs.15140 ESTs	
14134	31	AA489260	Hs.2596 ESTs Highly similar to phosphorylation regulatory protein HP-10 [H.sapiens]	
42421	31	VA4591	Hs.106535 ESTs Weakly similar to T2SG11.7 [C.elegans]	
15723	31	W79080	Hs.5337 ESTs Highly similar to ribosome-binding protein p34 [R.norvegicus]	
11140	31	AA158132	Hs.11817 ESTs Highly similar to YSA1 PROTEIN [Saccharomyces cerevisiae]	
28531	31	C22679	Hs.32753 ESTs	
2021	31	L34409	Hs.94799 Homo Sapiens (clone B183E13) chromosome 4p16.3 DNA fragment	
14622	31	AA510106	Hs.27693 ESTs Highly similar to PROBABLE PEPTIDYL-PROLYL CIS-TRANS ISOMERASE C21E11.05C [Schistosoma mansoni]	
29853	31	N21482	Hs.43100 ESTs	
19982	31	Z21420	Hs.30819 ESTs	
6541	31	X95832	Hs.86870 Human ABL interactor 2 (Abi-2) mRNA complete cds	
13229	30	AA454311	Hs.23393 ESTs	
27315	30	AA424038	Hs.59197 ESTs	
13621	30	AA456821	Hs.8923 ESTs Highly similar to BONE MORPHOGENETIC PROTEIN 1 PRECURSOR [Mus musculus]	
35929	30	AA412429	Hs.48642 ESTs	
17925	30	AA164209	Hs.31700 Homo sapiens RRM RNA binding protein Gyr-rop (GRY-RBP) mRNA complete cds	
5653	30	U76992	Hs.71134 Human Tef-SF1 mRNA complete cds	
15060	30	U54699	Hs.93121 Human LGN protein mRNA complete cds	
17757	30	AA147224	Hs.71814 EST	

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## FIGURE 3 (CONT.)

19050	3.0	Hs.24639	ESTs	Hs.24639	ESTs	
26520	3.0	AA278650	ESTs	Hs.73291	ESTs	
18006	3.0	AA033258		Hs.31921	Homo sapiens mRNA for KIAA0648 protein partial cds	
23028	3.0	F13700		Hs.115823	Homo sapiens ribonuclease P protein subunit p40 (RPP40) gene complete cds	
22960	3.0	T10272	ESTs	Hs.4287	ESTs	
33585	3.0	V93000	ESTs	Hs.59389	ESTs	
220	3.0	D12827		Hs.84021	Human mRNA for KIAA0002 gene complete cds	
4298	3.0	U36448		Hs.74574	Human Ca2+-dependent activator protein for secretion mRNA complete cds	
7445	3.0	AA104023	ESTs	Hs.110048	ESTs	
40903	3.0	N68970	ESTs	Hs.103808	ESTs	
10555	3.0	AA178387	ESTs	Hs.73596	ESTs	
7282	3.0	AA083339	ESTs	Hs.126781	ESTs	
9346	3.0	D03886	ESTs	Hs.112013	ESTs	
806	3.0	D87009		Hs.43354	Human (limb) DNA for immunoglobulin light chain	
38447	3.0	AA504355		Hs.54404	Human protein kinase ATR mRNA complete cds	
41464	3.0	R48937	ESTs	Hs.107450	ESTs	
9662	3.0	L19161		Hs.121541	TRANSLATIONAL INITIATION FACTOR 2 GAMMA SUBUNIT	
18978	3.0	AA063625	EST	Hs.66696	EST	
37428	3.0	AA540016	ESTs	Hs.99306	ESTs	
2538	3.0	M27878		Hs.94450	Zinc finger protein 54 (ZFP54)	
15174	3.0	U52987		Hs.87246	Human Bcl-2 binding component 3 (bcl3) mRNA partial cds	
33620	3.0	V63943	ESTs	Hs.59509	ESTs	
6794	3.0	Y11681		Hs.9964	Homo sapiens ribosomal protein S12 gene nuclear gene encoding mitochondrial protein complete cds	
41077	3.0	N95028	ESTs	Hs.125031	ESTs	
1932	3.0	L24604		Hs.75839	Human (623) mRNA complete cds	
39568	3.0	F03738	ESTs	Hs.3637	ESTs	
18103	3.0	AA022258	ESTs	Hs.59939	ESTs	
32156	3.0	R03081	ESTs	Hs.142852	ESTs	
13617	3.0	AA459646	ESTs	Hs.26661	ESTs	
11989	3.0	AA381251	ESTs	Hs.35695	ESTs	
6056	2.8	X68194		Hs.80919	Parathyroid human keratinocyte line HecA1 mRNA 2106 nt	
15445	2.8	V27374		Hs.53000	Homo sapiens TDD protein (BC10) mRNA complete cds	
38086	2.8	AA482557	EST	Hs.105139	EST	
13878	2.8	AA476804	ESTs	Hs.7114	ESTs	
6209	2.8	X18770		Hs.49007	H. sapiens PAP mRNA	
388	2.8	D28781		Hs.51	Phosphatidylinositol glycan class A (paroxysmal nocturnal hemoglobinuria) EST - HG4755-HT3203	
1351	2.8	G155-HT3203	ESTs	Hs.110122	ESTs	
42924	2.8	V87804	ESTs	Hs.96702	ESTs	
24855	2.8	AA311972	ESTs	Hs.20508	ESTs	
20157	2.8	N23393	ESTs	Hs.39188	ESTs	
28246	2.8	H2818	ESTs	Hs.85913	Human SYNSIN complex 155 KDa subunit (BAF155) mRNA complete cds	
4893	2.8	U56816	ESTs	Hs.107968	ESTs	
10104	2.8	R23855		Hs.89627	Protein tyrosine phosphatase receptor type gamma polypeptide	
1805	2.8	U6116		Hs.79070	V-myc avian myelocytomatous viral oncogene homolog	
4536	2.8	L00058		Hs.75562	Receptor protein-tyrosine kinase EDDR1	
10173	2.8	R56978		Hs.102963	ESTs	
26555	2.8	AA279071		Hs.94845	ESTs	
4401	2.8	U1515		Hs.85215	Human derived in split headsplit foot 1 (DSS1) mRNA complete cds	
21009	2.8	N90401	ESTs	Hs.28928	ESTs	
3602	2.8	U01317		Hs.117848	HENOGLOBIN EPSILON CHAIN	
4833	2.8	U63455		Hs.54470	Sulfonylurea receptor (hypertension)	
36700	2.8	AA421164	ESTs	Hs.107213	ESTs	
28645	2.8	AA281076	ESTs	Hs.109221	ESTs	
35299	2.8	AA398622		Hs.75153	Transcription factor 5-beta 1 (mitochondrial transcription factor 1-like)	
9604	2.8	M74568		Hs.63945	Human SLC1 mRNA complete cds	
9216	2.8	U63419		Hs.82919	Human CUL-2 (c-2) mRNA complete cds	
12313	2.8	AA397918	ESTs	Hs.22595	ESTs	
5928	2.8	X62048		Hs.75188	WEE1-LIKE PROTEIN KINASE	
39586	2.8	F09155	ESTs	Hs.71222	ESTs	

## FIGURE 3 (CONT.)

34758	29	AA327880	Hs.99076	EST	
18199	29	AA195318	Hs.63311	ESTs	
10667	29	Hs1478	Hs.15641	ESTs	
6091	29	X83988	Hs.82845	CD41 antigen (Rb-related antigen integrin-associated signal transducer)	
6264	29	U87182	Hs.78887	Human 28S proteasome-associated p40 homolog (PCH1) mRNA, complete cds	
13379	29	AA459867	Hs.106705	Human neuronal PAS2 (NPAS2) mRNA, complete cds	
1117	29	G3073-H1238	EST - H63075-H1238		
20533	29	N64407	Hs.34570	ESTs	
36495	29	AA551119	Human nucleoside 98 (NUP98) mRNA, complete cds		
33729	29	Z39654	Hs.85789	EST	
2028	29	L35093	Hs.79586	RIBOSE 5-PHOSPHATE ISOMERASE	
27374	29	AA425818	Hs.84641	ESTs Weekly similar to Y5C12A.3 (C elegans)	
19404	29	H20568	Hs.27182	ESTs	
26108	29	AA431189	Hs.53632	ESTs	
4189	29	U30930	Hs.57700	UDP-galactose 4-epimerase (UDP-galactose 4-epimerase)	
18708	29	AA433644	Hs.62843	ESTs	
357	29	D8156	Hs.78202	Human mRNA for transcriptional activator hSNF2b, complete cds	
28045	29	AA336278	Hs.87287	ESTs	
17796	29	AA150435	Hs.72063	ESTs	
8059	29	AA310967	Hs.5090	ESTs Weekly similar to T04A8.11 (C elegans)	
40914	29	N89220	Hs.41341	ESTs	
27169	29	AA410287	Hs.92304	Hsapiens mRNA for basic transcription factor 2.34 KD subunit	
21358	29	R18079	Hs.14775	ESTs	
3572	29	S87759	Hs.57764	Protein phosphatase 2C alpha (human teratocarcinoma mRNA 2346 nt)	
1853	29	L56424	Hs.3951	ESTs	
24845	29	AA267277	Hs.57649	CD44 antigen (cell adhesion molecule)	
35830	29	Z39106	Hs.82414	ESTs	
4433	29	AA411448	Hs.139386	ESTs	
20151	29	U43279	EST - U43279		
38648	29	N22885	Hs.8931	Human spleen clone 1400 unknown protein mRNA, partial cds	
7777	29	AA596287	EST - RC_AA596287		
32845	29	AA236820	Hs.118236	ESTs	
28259	29	W01598	Hs.55459	EST	
6853	29	AA505153	Hs.82273	ESTs	
35944	29	Z2351	Hs.73599	TRANSCRIPTION FACTOR P65	
30643	29	AA124488	Hs.89150	ESTs	
18965	29	N50571	Hs.42116	ESTs	
9518	29	H01411	Hs.24382	ESTs	
14945	29	AA465077	Hs.28555	ESTs	
8375	29	T98008	Hs.11085	ESTs Weekly similar to F55G2.2 (C elegans)	
34929	29	AA427180	Hs.103144	Hsapiens RNP (nucleosome assembly protein) mRNA, complete cds	
326	29	AA472084	EST - RC_AA472084		
27057	29	D21282	Hs.73537	Human mRNA for KIAA0035 gene, partial cds	
36292	29	AA400998	Hs.49559	ESTs	
6480	29	AA424513	EST - RC_AA424513		
15424	29	X31788	Hs.84974	Hsapiens mRNA for Irf1 protein	
11602	29	W27054	Hs.1255	APOLIPROTEIN A1 REGULATORY PROTEIN-1	
18175	29	AA413007	Hs.18420	ESTs	
25202	29	AA194730	Hs.85915	ESTs	
1681	29	AAQ34527	Hs.95182	EST	
14566	29	L07493	Hs.1608	Replication protein A (E. coli RcaA homolog RAD51 homolog)	
25914	29	AA621132	Hs.5198	ESTs	
14182	29	AA115780	Hs.142790	ESTs	
31599	29	AA460985	Hs.27786	ESTs	
18353	29	N72196	Hs.50199	EST	
8162	29	AA305570	Hs.80248	ESTs	
22911	29	X7892	Hs.38841	Regulatory factor (trans-acting) 3	
33549	29	T03865	Hs.27047	ESTs	
35955	29	AA412174	Human spleen RRM RNA binding protein GRY-1p (GRY-RBP) mRNA, complete cds		
	29	AA112538	Hs.20183	ESTs Weekly similar to ORF2 consensus sequence encoding endonuclease and reverse transcriptase minus RNaseH (R. norvegicus)	



## FIGURE 3 (CONT.)

17642	27	AA132983	Hs 44155	ESTs Moderately similar to C-1-TETRAHYDROFOLATE SYNTHASE CYTOPLASMIC [H.sapiens]
6131	27	X72841	Hs 2758	Human retinoblastoma-binding protein (RB4046) mRNA complete cds
41429	27	R44894	Hs 108182	ESTs
17052	27	AA070815	EST - RC_AA070815	ESTs
34243	27	AA232650	Hs 142190	ESTs
22937	27	T10065	Hs 4214	Homo sapiens TLS-associated protein TASR-2 mRNA complete cds
5183	27	U82100	Hs 178910	Human tumor susceptibility protein (TSG101) mRNA complete cds
32837	27	NS4418	Hs 47820	ESTs
15243	27	AA012902	Hs 60556	ESTs
19554	27	H80100	Hs 33977	ESTs
6444	27	X89750	Hs 90077	H.sapiens mRNA for TGIF protein
5916	27	X81022	Hs 89966	Human mRNA for T cell receptor clone IGBA17
8200	27	X78827	Hs 73586	H.sapiens mRNA for translin
42116	27	T89524	EST - RC_T89524	ESTs
17586	27	AA213333	Hs 97101	ESTs
42334	27	AA128905	Hs 22587	ESTs
28913	27	N21111	Hs 89403	Homo sapiens protein-tyrosine kinase EPHB2 (EPH82) mRNA complete cds
38898	27	AA609453	Hs 98265	ESTs
10116	27	R88880	Hs 107823	ESTs Moderately similar to zinc finger protein [M.musculus]
14789	27	SA4441	Hs 73103	HZF-16
32951	27	V03266	Hs 77493	Human mRNA for KIAA0005 gene complete cds
35273	27	AA385507	Hs 97361	ESTs
10180	27	R60100	Hs 25936	ESTs
32583	27	T27897	Hs 21603	Human mRNA for KIAA0036 gene complete cds
34502	27	AA392788	Hs 7523	ESTs
13223	27	AA443720	Hs 7551	ESTs
8494	27	AA443460	Hs 3470	ESTs
7776	27	AA387711	Hs 101368	ESTs
10400	27	AA037244	Hs 30098	ESTs
1130	27	G3132-RT3305	EST - HG3132-RT3305	ESTs
2379	27	M18837	Hs 819	Human homeo box c1 protein mRNA complete cds
18268	27	F10688	Hs 46571	Human SH3 domain-containing protein SHP18 mRNA complete cds
34196	27	AA291259	Hs 37101	ESTs
41955	27	T33311	Hs 3281	Neuronal pentraxin II
2009	27	L33881	Hs 1904	Protein kinase C iota
1385	27	Z18501	Hs 8768	ESTs Weekly similar to PROBABLE ES PROTEIN [human papillomavirus type 59]
24758	27	G884-HT844	EST - HG884-HT844	ESTs
7820	27	AA182484	Hs 52589	ESTs Weekly similar to MITOCHONDRIAL INNER MEMBRANE PROTEASE SUBUNIT 2 [S.cerevisiae]
30713	27	N52078	Hs 15004	Homo sapiens mRNA for KIAA0837 protein complete cds
21256	27	R09185	Hs 86013	Homo sapiens mRNA for KIAA0584 protein partial cds
40528	27	N03325	Hs 107514	ESTs Highly similar to 47 KD PROTEIN [Pseudomonas chlororaphis]
25335	27	AA045063	Hs 77719	VITAMIN K-DEPENDENT GAMMA-CARBOXYLASE
8298	27	D82775	Hs 10724	ESTs Weekly similar to unknown [S.cerevisiae]
12174	27	AA282128	Hs 28750	ESTs
38397	27	AA487265	Hs 10265	ESTs
3154	27	M82712	Hs 1814	Cholinergic receptor nicotinic alpha polypeptide 5
7383	27	AA093854	Hs 109822	ESTs Weekly similar to HYPOTHETICAL 16.8 KD PROTEIN IN SMY2.RPS101 INTERGENIC REGION [S.cerevisiae]
1923	27	Z28603	Hs 1695	Menix metalloproteinase 12 (microphage elastase)
24905	27	Z11840	Hs 8817	ESTs
30407	26	N45963	Hs 46572	ESTs
34726	26	AA287278	Hs 87721	ESTs
25408	26	AA48787	Hs 23376	ESTs Moderately similar to IIIc ALU SUBFAMILY SC WARNING ENTRY IIIc [H.sapiens]
7158	26	AA037206	Hs 72071	ESTs
26286	26	AA253351	Hs 44439	ESTs
19822	26	H58884	Hs 37573	ESTs
12379	26	AA399415	Hs 23170	Homo sapiens mRNA for JMK3 protein complete coding sequence (clone IMAGE 45355 and LLNL11013307 (RZFP0 Berlin))
22898	26	R82287	Hs 29406	ESTs
24161	26	V058015	Hs 34620	ESTs

## FIGURE 3 (CONT.)

9558	26	Hs11407	Hs12063	ESTs	
18104	26	AA188601	Hs15634	ESTs	
24892	26	Z41563	Hs26975	ESTs	
40038	26	H69465	Hs3235	ESTs	
8865	26	AB003319	Hs106178	Human mRNA for KIAA0361 gene KIAA0361 protein	
22148	26	R51831	Hs25878	ESTs	
4527	26	U51990	Hs84178	Human tPp18 mRNA complete cds	
8394	26	AA426156	Hs42714	ESTs	
20422	26	N49500	Hs24998	ESTs	
41602	26	R87258	Hs39715	ESTs Moderately similar to moesin [R. muscicul]	
812	26	DS5460	Hs74670	Human mRNA for KIAA0146 gene partial cds	
4821	26	U62801	Hs73381	Human protease M mRNA complete cds	
15388	26	AA053296	Hs83136	ESTs	
38023	26	W07562	Hs26198	ESTs Moderately similar to rA8 [R. norvegicus]	
23822	26	T91715	Hs14574	ESTs Highly similar to HYPOTHETICAL 103.6 KD PROTEIN IN COX19-PFK26 INTERGENIC REGION [Saccharomyces cerevisiae]	
10951	26	AA126719	Hs32382	ESTs	
6150	26	X74282	Hs10528	RETICULASTOMA BINDING PROTEIN P48	
39036	26	C20945	Hs10817	ESTs Highly similar to HYPOTHETICAL 54.2 KD PROTEIN IN CDC12-ORC6 INTERGENIC REGION [Saccharomyces cerevisiae]	
17783	26	AA150242	Hs71587	ESTs Highly similar to modular recognition factor 2 [H. sapiens]	
26591	26	AA029859	Hs53657	ESTs	
2175	26	L42621	Hs33062	Human sapiens Lx-9 mRNA complete cds	
10542	26	AA040148	Hs110103	Human Chromosome 18 BAC clone C17817SKA-270G1	
15026	26	U41818	Hs31181	Human C-1 mRNA complete cds	
7039	26	AA213239	Hs70830	Human sapiens chromosome 19 contig R00783	
6943	26	X39554	Hs12743	Human sapiens mRNA for SCR-1 complete cds	
20536	26	N82122	Hs83313	ESTs	
11208	26	AA207114	Hs27642	ESTs	
4068	26	U24704	Hs111709	Human antisecretory factor-1 mRNA complete cds	
38615	26	AA389338	EST - RC_AA595939	EST - RC_AA595939	
11819	26	AA258189	Hs32471	ESTs	
37433	26	AA454103	Hs110031	ESTs	
28270	26	AA321186	Hs64217	ESTs	
5587	26	X13482	Hs80506	U2 SMALL NUCLEAR RIBONUCLEOPROTEIN A'	
19841	26	H59617	Hs3199	ESTs Highly similar to U5.QUITIN-CONJUGATING ENZYME E2-17 KD [Drosophila melanogaster]	
10655	26	AA040882	Hs10290	ESTs	
14053	26	AA485147	Hs12263	ESTs Highly similar to HYPOTHETICAL 63.6 KD PROTEIN R0503.2 IN CHROMOSOME III [Caenorhabditis elegans]	
31574	26	N71303	Hs52015	EST	
7814	26	AA187379	Hs103906	ESTs Weakly similar to Ye007c-46 [S. cerevisiae]	
37871	26	AA479185	Hs103920	EST	
7090	26	AA038913	Hs103300	Human sapiens dipthamide biosynthesis protein-2 (DPH2) mRNA complete cds	
17652	26	AA183360	Hs54023	ESTs	
24216	26	V08960	Hs19416	ESTs	
19070	26	H03370	Hs133523	Human clone 23960 mRNA sequence	
17719	26	AA138569	Hs144293	EST	
38668	26	AA596684	Hs37730	Human mRNA for KIAA0133 gene complete cds	
20882	26	N78565	Hs28994	ESTs	
9155	26	D31446	Hs10488	Human sapiens breakpoint cluster region protein 1 (BCRG1) mRNA complete cds	
11362	26	AA227281	Hs20922	ESTs	
8813	26	AA489555	Hs31921	Human sapiens mRNA for KIAA0548 protein partial cds	
13866	26	AAAT6319	Hs5327	ESTs	
10033	26	R86178	Hs51187	Alaska klangelastase mutant [includes complementation groups A C and D]	
22289	26	R59601	Hs28679	EST	
18237	26	AA208591	EST - RC_AA208591	EST - RC_AA208591	
20555	26	N55188	Hs19468	ESTs	
39352	26	F03605	Hs75574	PUTATIVE 60S RIBOSOMAL PROTEIN	
27530	26	AA155969	Hs134132	ESTs	
1765	26	U13134	Hs84162	Human chromosome 3p21.1 gene sequence complete cds	
14746	26	D66354	Hs80315	Human mRNA for KIAA0007 gene partial cds	
29933	26	M64926	Hs75200	Protein phosphatase 2 [formerly 2A] regulatory subunit B [PR 52] alpha isoform	

## FIGURE 3 (CONT.)

19191	25	H11297	Hs.31050	ESTs	
12886	25	AA330032	Hs.7487	ESTs	Moderately similar to PTTG gene product (R nonviral)
15452	25	V074561	Hs.12064	Human Cdc5-related protein (PDC5RP) mRNA complete cds	
18003	25	AA171682	Hs.70980	ESTs	
24198	25	W67524	Hs.82911	Human protein-tyrosine phosphatase (LUPP-1) mRNA partial sequence	
43853	25	W92703	Hs.103209	ESTs	
26446	25	AA387286	Hs.142200	ESTs	Weakly similar to putative p150 (H sapiens)
30438	25	Hs.48800	ESTs	Weakly similar to CS054.13 (C. elegans)	
36365	25	AA425920	Hs.38976	ESTs	Weakly similar to probable CBP2 protein homolog (C. elegans)
26135	25	AA425920	Hs.38977	ESTs	
41865	25	T23449	Hs.110218	ESTs	Moderately similar to ZNF-127.5p (H sapiens)
15457	25	W27560	Hs.90769	ESTs	
27148	25	AA455159	Hs.41723	Human linear-like spindle protein (LSP) mRNA complete cds	
32315	25	R69840	Hs.70189	ESTs	Weakly similar to UNC-1 REVERSE TRANSCRIPTASE HOMOLOG (Nematostella)
25310	25	AA046745	Hs.110457	ESTs	
42720	25	Z39436	Hs.102720	ESTs	
13939	25	AA428204	Hs.22830	ESTs	
30746	25	N52243	Hs.47435	ESTs	
2232	25	L78703	Hs.73526	Human protein phosphatase 2A, B56-epitope (P22A) mRNA complete cds	
11609	25	AA243303	Hs.21187	ESTs	
9653	25	L16991	Hs.79008	Decarboxylase kinase	
12210	25	AA253774	Hs.21261	ESTs	Weakly similar to PROBABLE TRYPTOPHAN-TRYRNA SYNTHETASE MITOCHONDRIAL (C. elegans)
3563	25	S83384	EST - S83384		
42407	25	W44768	Hs.75474	Kcno sapiens neophycin (NPHF) mRNA partial cds	
32678	25	V20391	Hs.20530	Human mRNA for kinesin-related protein partial cds	
9802	25	L37747	Hs.89497	LAMIN B1	
27902	25	AA159808	Hs.50833	ESTs	
33861	25	Z18630	Hs.69001	ESTs	
12788	25	AA051178	Hs.43382	ESTs	
8886	25	N35449	Hs.111469	ESTs	Highly similar to HYPOTHETICAL 30.3 KD PROTEIN IN APELAP4/CWP1 INTERGENIC REGION (Saccharomyces cerevisiae)
5822	25	X22163	Hs.82479	Minichromosome maintenance deficient (S. cerevisiae) 3	
12665	25	X22163	Hs.82479	Minichromosome maintenance deficient (S. cerevisiae) 3	
17352	25	AA185677	Hs.85757	ESTs	Weakly similar to F18A11.1 (C. elegans)
12197	25	AA283206	Hs.10852	ESTs	
6710	25	X78942	Hs.77335	Human sapiens popic-245 mRNA complete cds	
54047	25	AA194168	Hs.109520	ESTs	Weakly similar to G1 TO S PHASE TRANSITION PROTEIN 1 HOMOLOG (H sapiens)
18279	25	AA059352	Hs.82399	ESTs	
26834	25	AA287139	Hs.93648	ESTs	Weakly similar to ASPARTYL-TRYRNA SYNTHETASE (Thermus aquaticus thermophilus)
5157	25	U00034	Hs.88383	Human mitochondrial intermediate peptidase precursor (MPEP) mRNA mitochondrial gene encoding mitochondrial protein complete cds	
38434	25	AA497013	Hs.142392	ESTs	
33269	25	W72967	Hs.86257	ESTs	
28991	25	AA388284	Hs.48050	ESTs	
7590	25	AA173505	Hs.35353	ESTs	Weakly similar to HYPOTHETICAL 46.1 KD PROTEIN IN PHO2-POL3 INTERGENIC REGION (S. cerevisiae)
14680	25	U22337	Hs.59872	Human fetal A2-50-reactive clone 1 (FAC1) mRNA complete cds	
13365	25	AA455989	Hs.22151	ESTs	Highly similar to NEUROLYSIN PRECURSOR (Sus scrofa)
33901	25	AA412151	Hs.108974	ESTs	
38185	25	AA497503	Hs.93077	Human sapiens mRNA for KIAA0688 protein complete cds	
34678	25	AA284744	Hs.75510	Annexin XI (S610 autolysate)	
1474	25	J02845	Hs.81913	Eukaryotic translation initiation factor 2A	
16778	25	AA047508	Hs.62300	ESTs	
21878	25	RA1236	EST - RC_R43285		
17779	25	AA149841	Hs.55405	ESTs	
24559	25	Z36886	Hs.7588	ESTs	
7781	25	AA424204	Hs.40937	Human sapiens poliovirus G1a protein 1 (PRCP1) mRNA complete cds	
7474	25	AA126392	Hs.3400	ESTs	Weakly similar to No definition line found (C. elegans)
34290	25	AA236866	Hs.113114	ESTs	
5316	25	U09005	Hs.79385	Human clone 23571 mRNA sequence	
10218	25	R68384	Hs.86347	ESTs	Highly similar to HYPOTHETICAL 44.2 KD PROTEIN IN SC02-MRF1 INTERGENIC REGION (Saccharomyces cerevisiae)
18109	25	AA188981	Hs.58169	Human sapiens ribonucleosome-associated protein hRC mRNA complete cds	
6465	25	X92298	Hs.73514	H sapiens mRNA for transmembrane protein mp24	

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## FIGURE 3 (CONT.)

34654	26	AA342939	EST - RC_AA342939
42358	25	W74751	Hs.110041 ESTs
27444	25	AA30180	Hs.42785 ESTs Weakly similar to F23H9.7 [C. elegans]
21284	25	R10301	Hs.20584 EST
8920	25	AF068785	Hs.8222 Homo sapiens cancer associated surface antigen (RCAS1) mRNA complete cds
30037	25	N27439	Hs.51652 ESTs
27602	25	AA443702	Hs.29635 ESTs Weakly similar to W02912.7 [C. elegans]
3390	25	S58184	Hs.79350 RYK receptor-like tyrosine kinase
25040	25	AA010188	Hs.103303 ESTs
37713	24	AA461317	Hs.34650 ESTs
40477	24	N24096	Hs.92546 Homo sapiens BAC clone RG300E22 from 7q21-q31.1
25332	24	H72814	Hs.103318 ESTs
35521	24	AA400331	Hs.111918 ESTs
20334	24	N35406	Hs.74014 Phospholipase C beta 4
18630	24	P02508	Hs.9417 ESTs
21047	24	R00186	Hs.18856 EST
9550	24	N71503	Hs.43307 ESTs
31965	24	N93629	Hs.93391 ESTs
19120	24	U73524	Hs.87485 Human putative ATPGTP-binding protein (HEAB) mRNA complete cds
23813	24	D59257	Hs.91181 Human C-1 mRNA complete cds
38282	24	AA482284	Hs.110493 ESTs
34723	24	AA387115	Hs.95697 ESTs
7960	24	AA385277	Hs.8532 Homo sapiens brain expressed ring finger protein mRNA complete cds
18073	24	AA180453	Hs.73643 EST
39735	24	AA455688	EST - RC_AA455688
18927	24	F11087	Hs.12544 ESTs
3457	24	S74728	Hs.74294 Anticollin
38606	24	AA58844	Hs.12492 ESTs
20687	24	N76086	Hs.35464 ESTs
24732	24	Z40012	Hs.21862 Homo sapiens mRNA for KIAA0587 protein complete cds
28443	24	AA621011	Hs.70877 ESTs
452	24	D33078	Hs.24763 RAN binding protein 1
11701	24	AA353031	Hs.31730 Homo sapiens RRM RNA binding protein Gyr-tp (GRY-RBP) mRNA complete cds
13653	24	AA458619	Hs.30212 ESTs Weakly similar to 26S proteasome subunit p44.5 [H. sapiens]
24822	24	Z40956	Hs.111541 ESTs
12672	24	AA417067	Hs.13055 ESTs
4856	24	U63717	Hs.95821 Human osteoclast stimulating factor mRNA complete cds
42200	24	T83729	EST - RC_T83729
10997	24	AA132239	ESTs Highly similar to HYPOTHETICAL 47.4 KD PROTEIN IN SHP1-SEC17 INTERGENIC REGION [Saccharomyces cerevisiae]
35672	24	AA404985	EST - RC_AA404985
6224	24	X77748	Hs.3786 Glutamate receptor metabotropic 3
28395	24	AA610084	Hs.73602 ESTs
36390	24	AA438381	Hs.108537 ESTs Weakly similar to No definition line found [C. elegans]
21045	24	N93403	Hs.109441 ESTs
4358	24	U43279	Hs.54506 Human diacylglycerol kinase epsilon DOK mRNA complete cds
12915	24	AA427745	Hs.37747 ESTs
20850	24	N93514	Hs.28877 ESTs Weakly similar to oridonin diolase [H. sapiens]
29759	24	H99972	Hs.42771 ESTs
36766	24	AA435815	Hs.77965 Human Ck-associated RS cyclophilin CARS-Cyp mRNA complete cds
31943	24	N93185	Hs.54911 ESTs
7097	24	AA011432	Hs.21840 ESTs
39462	24	D60083	Hs.3012 ESTs
14420	24	AA000322	Hs.18574 ESTs Highly similar to AAC-RICH mRNA AAC3 PROTEIN [Drosophila discolor]
34623	24	AA382527	EST - RC_AA382527
27431	24	AA429038	Hs.40541 ESTs
6397	24	X65372	Hs.105465 H.sapiens mRNA for Sm protein F
11242	24	AA233874	Hs.14843 Homo sapiens mRNA for KIAA0704 protein partial cds
1657	24	J04085	Hs.3378 Topoisomerase (DNA) II alpha (TOP2)
8841	24	N57734	Hs.85723 Centromere autoantigen C
11454	24	AA333864	Hs.23348 ESTs

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# FIGURE 3 (CONT.)

29550	24	N2992	Hs. 89245	Homo sapiens mRNA for E1B-55kDa-associated protein
8396	24	AA48176	Hs. 104613	ESTs Weakly similar to Similar to S. cerevisiae hypophthal protein L3111 [H.sapiens]
32978	24	W4278	Hs. 1098	Human terminal transferase mRNA complete cds
27872	24	AA43924	Hs. 48855	ESTs
11623	24	AA43817	Hs. 31082	ESTs
26582	24	AA47978	Hs. 85663	ESTs
22142	24	BS132	Hs. 124275	Homo sapiens mRNA for KIAA0659 protein partial cds
13533	24	AA46407	Hs. 38114	ESTs Highly similar to HYPOPHYLLAL 40.2 KO PROTEIN KIAH 3 IN CHROMOSOME III [Caenorhabditis elegans]
14354	24	AA39823	Hs. 81445	ESTs
5978	24	AA42729	Hs. 110713	DEK PROTEIN
6231	24	X78121	Hs. 210	Chondroderma
2382	24	M18967	Hs. 30054	Calculation factor V
22887	24	103314	Hs. 25402	ESTs
24371	24	W67415	Hs. 18918	ESTs Weakly similar to III ALU SUBFAMILY J WARRING ENTRY III [H.sapiens]
23286	24	AA045261	Hs. 103239	ESTs
9064	24	C02472	Hs. 5151	ESTs Weakly similar to EBV-INDUCED A PROTEIN-COUPLED RECEPTOR 1 PRECURSOR [Homo sapiens]
8163	24	AA35794	Hs. 98073	ESTs
12233	24	AA43513	Hs. 28813	ESTs Weakly similar to LINE1g H-chain fusion protein [H.musculus]
22924	24	108185	Hs. 3772	ESTs
14371	24	AA58018	Hs. 10272	ESTs Moderately similar to ALB [H.sapiens]
12401	24	AA400228	Hs. 30503	ESTs
25169	24	AA351089	Hs. 64578	ESTs Weakly similar to DRF YOR281 [E.coli]
23085	24	729539	Hs. 7165	ESTs Highly similar to zinc finger protein [H.musculus]
20254	24	M5395	Hs. 15741	ESTs
20337	24	NC0383	Hs. 2524	ESTs Highly similar to HECOMINASE TYPE 1 [Homo sapiens]
18031	24	AA35338	Hs. 14530	Prime sapiens DNA sequence from PAC 44001 on chromosome 1 q23.41. Contains the NSD1B1 gene for Nucleoside (11-beta) Dehydrogenase 1 the ADORA2B adenosine A2b receptor like pseudogene the IPR6
7813	24	AA48397	Hs. 12605	ESTs
21185	24	R07210	Hs. 19913	ESTs
13077	24	AA449720	Hs. 20207	Homo sapiens clone 24709 mRNA sequence
9714	24	L44367	Hs. 96523	ESTs
41537	23	R56073	Hs. 108627	ESTs
17932	23	AA100925	Hs. 20990	ESTs
11814	23	AA278907	Hs. 24549	ESTs
24890	23	241634	Hs. 26037	ESTs
28796	23	OS1272		EST - RC_D51272.1
38738	23	AA458970	Hs. 97574	ESTs Weakly similar to B0564 [C.allegans]
22491	23	R70012	Hs. 28055	ESTs
4738	23	U81518	Hs. 85301	Human calcium-binding protein cbp mRNA complete cds
40447	23	N68454	Hs. 109437	ESTs
15637	23	N68457	Hs. 141503	Small molecule cyclin A5 (NANTE5)
24482	23	228137	Hs. 15386	ESTs
42032	23	133138	Hs. 19382	Homo sapiens mRNA for NTCF-4
38233	23	AA489223	Hs. 99807	ESTs
41221	23	R21531	Hs. 78973	ESTs Weakly similar to III ALU SUBFAMILY J WARRING ENTRY III [H.sapiens]
8053	23	AA309880	Hs. 109857	ESTs
29679	23	AA281733	Hs. 4310	ESTs
13407	23	AA452000	Hs. 7919	ESTs
11755	23	AA166703	Hs. 53589	ESTs
31858	23	N68090	Hs. 54642	ESTs
24092	23	W42845	Hs. 14811	Homo sapiens protein tyrosine phosphatase PRT1 mRNA complete cds
18759	23	AA46254	Hs. 40814	ESTs
7765	23	AA324326	Hs. 12540	Homo sapiens clone 23797 and 23817 mRNA partial cds
41178	23	R08178	Hs. 57435	Natural killer cell-associated receptor protein 2
3360	23	U73913	Hs. 83943	Homo sapiens clone 23797 and 23817 mRNA partial cds
40804	23	N88146	Hs. 5151	ESTs Weakly similar to EBV-INDUCED A PROTEIN-COUPLED RECEPTOR 1 PRECURSOR [Homo sapiens]
39428	23	H22949	Hs. 31942	ESTs
38050	23	AA417282		EST - RC_AA417282
27284	23	AA418389	Hs. 42218	ESTs
12800	23	AA462265	Hs. 30794	ESTs

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# FIGURE 3 (CONT.)

13552	23	AA45643	Hs 28911	EST1
13664	23	W87456	Hs 56835	EST1s Moderately similar to YYY-associated factor 2 [H.sapiens]
26513	23	AA77974	Hs 42497	EST1
37434	23	AA45418	Hs 60357	EST1
7833	23	AA44930	Hs 7046	EST1s
3874	23	U05237	Hs 99872	Human testis Ab-50-reactive clone 1 (FAC1) mRNA complete cds
33864	23	U05237	Hs 11623	EST1
11178	23	AA18148	Hs 22048	EST1s
14927	23	AA45418	Hs 60883	EST1s
18788	23	Hs7330	Hs 37430	EST1
5946	23	AB0357	EST1 - X83337	
42087	23	784318	Hs 78770	Isoluciferin synthase
24247	23	W73010	Hs 108761	Ribosomal protein L37
40879	23	N67816	Hs 33263	EST1s Moderately similar to [Hs] ALU SUBFAMILY SX WARNING ENTRY [Hs.sapiens]
5875	23	X59405	Hs 83532	Membrane collagen protein (CD46) monoblast lymphocyte cross-reactive antigen
22325	23	R80777	Hs 8356	EST1s
9631	23	J05502	Hs 60758	ASPARTYL-TRNA SYNTHETASE
9739	23	D79100	Hs 63166	EST1s
41987	23	747738	Hs 109928	EST1s
31105	23	N83207	Hs 48735	EST1
39565	23	FM4310	Hs 35120	Replication factor C 37 kD subunit
7404	23	AA59488	Hs 7391	Homo sapiens voltage dependent L-type channel protein mRNA complete cds
6288	23	X85373	Hs 72496	H.sapiens mRNA for Sm protein C
20283	23	N31952	Hs 103747	EST1s Moderately similar to HYPOTHETICAL 66.5 KD PROTEIN F02A3.5 IN CHROMOSOME III [Caenorhabditis elegans]
14599	23	AA52007	Hs 22379	EST1s
21197	23	R07300	Hs 19048	EST1s
26203	23	AA45968	Hs 59838	EST1s
38320	23	AA45968	Hs 59838	EST1s
41875	23	PR8323	Hs 10490	EST1s
4674	23	U44959	Hs 57121	Human (LH) protein mRNA complete cds
28851	23	D80037	Hs 45129	EST1s Weakly similar to C50B8.3 [C.allegans]
31082	23	N62877	Hs 48843	EST1s
28756	23	AA38353	Hs 86619	EST1s
11567	23	AA38353	Hs 30327	Homo sapiens myogen activated protein kinase activated protein kinase gene complete cds
25550	23	AA011134	Hs 25883	EST1s Weakly similar to rnah1 [H.sapiens]
41835	23	728651	Hs 75761	Human serine kinase mRNA complete cds
26855	23	AA327165	Hs 42650	H.sapiens mRNA for M-phase phosphoprotein mp05
40545	23	N24817	Hs 104928	Homo sapiens mRNA for KDA0458 protein partial cds
3343	23	M7336	Hs 21486	SIGNAL TRANSDUCER AND ACTIVATOR OF TRANSCRIPTION 1-ALPHA/BETA
42435	23	W46954	Hs 109903	EST1s
5937	23	X82554	Hs 80854	High-mobility group (nonhistone chromosomal) protein 2
21241	23	R08517	Hs 20190	EST1s
25756	23	AA135668	Hs 85783	EST1s
34154	23	AA27359	Hs 3780	Human Oxytetracycline phosphatase Mdr2 (Mdr2) mRNA complete cds
8672	23	AA47346	Hs 59838	EST1s
2387	23	AA03877	Hs 74475	EST1s
23872	23	D58352	Hs 60834	EST1s
18716	23	AA17323	Hs 44428	EST1s
20843	23	N8352	Hs 9883	Homo sapiens mRNA for ATP-dependent RNA helicase sds complete cds
10054	23	R10286	Hs 12097	EST1s Highly similar to HYPOTHETICAL GTP-BINDING PROTEIN IN PHA4-PAC2 INTERGENIC REGION [Saccharomyces cerevisiae]
34094	23	AA06088	Hs 104139	EST1s
41246	23	R27296	Hs 23240	EST1s
22834	23	R8287	Hs 103229	EST1s
19056	23	H48502	Hs 18212	EST1s
34568	23	AA38009	Hs 111280	EST1s Weakly similar to K0282.2 gene product [C.elegans]
28448	23	AA421732	Hs 78897	Human ZSS proteasome-associated pad1 homolog (POH1) mRNA complete cds
20909	23	N71704	Hs 4310	EST1s
651	23	D78129	EST1 - D78129	
40409	23	N89877	Hs 55951	Homo sapiens suptorin 1 mRNA complete cds
20340	23	N38825	Hs 38956	EST1s

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## FIGURE 3 (CONT.)

30002	22	H92005	EST - RC_H92005	
37321	22	AA451858	Hs 92860 ESTs	
8274	22	AA402035	Hs 63131 ESTs	
20221	22	N29345	Hs 28917 ESTs	
5792	22	X34941	Hs 77550 CDO26 protein kinase 1	
4034	22	U21958	Hs 60679 Human transcription initiation factor TFIIID subunit TAFII23 mRNA complete cds	
36222	22	AA421481	Hs 81134 ESTs	
16367	22	AA031591	Hs 83320 ESTs	
4721	22	U58046	Hs 82131 Human mRNA for KIAA0139 gene complete cds	
26856	22	D19708	Hs 5122 Human Gu protein mRNA, partial cds	
20723	22	N66093	Hs 21964 ESTs	
8714	22	Y08612	Hs 30734 H sapiens mRNA for Nucleo protein	
19240	22	H13265	Hs 31196 ESTs	
38447	22	AA428188	Hs 26008 ESTs	
11568	22	AA326372	Hs 103300 Homo sapiens diaphanous protein-2 (DPH2) mRNA complete cds	
21650	22	R37938	Hs 11911 Homo sapiens KIAA0440 mRNA partial cds	
14152	22	AA488790	Hs 49376 Homo sapiens Ran-GTP binding protein mRNA partial cds	
42937	22	Y92711	Hs 77531 GLYCINE CLEAVAGE SYSTEM H PROTEIN PRECURSOR	
46242	22	U55427	Hs 14839 Human RNA polymerase II subunit NRPE2 mRNA complete cds	
32779	22	W02102	Hs 53565 ESTs	
38341	22	AA490967	Hs 10276 ESTs	
11803	22	AA357971	Hs 21214 ESTs	
34635	22	AA392677	Hs 80624 ESTs	
39055	22	AA520589	Hs 24766 ESTs	
4046	22	U22376	Hs 1334 MYB PROTO-ONCOGENE PROTEIN	
11600	22	AA242868	Hs 7385 ESTs Weakly similar to house-keeping protein [M. musculus]	
5051	22	U76638	Hs 54088 Human BRCA1-associated RING domain protein (BARD1) mRNA complete cds	
33917	22	AA167323	Hs 111046 ESTs	
20474	22	N63392	Hs 12603 ESTs	
41031	22	N91246	Hs 102897 ESTs	
25114	22	AA020623	Hs 103353 EST	
24711	22	Z38645	Hs 21470 ESTs	
4733	22	U88558	Hs 57889 Human unknown protein mRNA within the p53 intron 1 complete cds	
4911	22	U64033	Hs 78628 Human glycyl-protein-5 (GPC5) mRNA complete cds	
29733	22	H93898	Hs 42860 EST	
23155	22	T30550	Hs 22615 ESTs	
34335	22	AA323867	Hs 104473 EST	
33541	22	AA400986	Hs 99955 Prathymosin alpha	
1839	22	L32591	Hs 1378 Anexin II (pooderin II)	
13106	22	U68111	Hs 91585 PROTEIN PHOSPHATASE INHIBITOR 2	
40131	22	HY9779	Hs 8975 Homo sapiens histone deacetylase 3 (HDAC3) mRNA complete cds	
19518	22	H28207	Hs 32459 EST	
4136	22	U28014	Hs 74122 IGH-2 PROTEASE PRECURSOR	
20278	22	N33319	Hs 27931 ESTs	
13292	22	AA447821	Hs 31257 ESTs Highly similar to 40 KD PROTEIN [Borna Disease virus]	
20666	22	N83165	Hs 23616 ESTs	
5005	22	X65590	Hs 44450 SRS Transcription factor	
18238	22	AA205589	Hs 41145 ESTs	
21837	22	R37410	Hs 21095 EST	
3435	22	S70294	Hs 119140 Eukaryotic translation initiation factor 5A	
34046	22	AA383772	Hs 75097 ACTIVATOR 1.38 KD SUBUNIT	
5944	21	X63557	Hs 74050 Follicular lymphoma variant translocation 1	
13250	21	AA449459	Hs 27599 ESTs	
34370	21	AA351829	Hs 104058 ESTs Weakly similar to HYPOTHETICAL 27.4 KD PROTEIN IN MER2-CPRT INTERGENIC REGION [Saccharomyces cerevisiae]	
27996	21	AA470156	Hs 80449 ESTs Weakly similar to dymin TAK chain cytosolic [R. norvegicus]	
4408	21	U41745	Hs 38553 Human POGF associated protein mRNA complete cds	
4187	21	U30883	Hs 75981 Human tRNA-guanine transglycosylase mRNA complete cds	
10804	21	AA086549	Hs 18479 ESTs	
34352	21	AA279985	Hs 15389 Human mRNA for KIAA0372 gene complete cds	
18390	21	AA227119	Hs 70256 ESTs	

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## FIGURE 3 (CONT.)

5223	21	U83643	EST - U83643	EST - U83643
37415	21	AA453807	Hs.09349	EST
14582	21	AA021340	Hs.10630	ESTs Weakly similar to HYPOTHETICAL 39.6 KD PROTEIN IN MTD-1/KUP133 INTERGENIC REGION [Saccharomyces cerevisiae]
27756	21	AA453447	Hs.39421	ESTs
13787	21	AA463745	Hs.12258	ESTs Highly similar to PRE-MRNA SPLICING FACTOR RNA HELICASE PRP22 [Saccharomyces cerevisiae]
5173	21	U81554	Hs.5171	Human sapiens signal recognition particle 72 (SRP72) mRNA complete cds
40029	21	H88221	Hs.108332	Human E2 ubiquitin conjugating enzyme UbcH5B (UBCH5B) mRNA complete cds
19972	21	H55639	Hs.33376	ESTs
23301	21	T52847	Hs.13034	ESTs
20504	21	N52966	Hs.142838	ESTs
40145	21	H81391	Hs.81182	Human mRNA for histamine N-methyltransferase complete cds
3461	21	S75256	EST - S75256	EST - S75256
41953	21	T23811	Hs.51231	ESTs
39288	21	C14803	EST - RC_C14803	EST - RC_C14803
30021	21	AA119376	Hs.5169	ESTs Weakly similar to TRANSFORMATION-SENSITIVE PROTEIN TEF SSP 3521 [K.sapiens]
8382	21	AA424199	Hs.106529	ESTs Weakly similar to C50B8.3 (C. elegans)
28286	21	AA598447	Hs.85951	Human sapiens apocardin mRNA complete cds
5807	21	X55740	Hs.78856	5' nucleotidase (CD73)
18747	21	H33872	Hs.32407	ESTs
38155	21	AA486777	Hs.105698	ESTs
924	21	G112-RT11112	EST - HG-112-RT1112	EST - HG-112-RT1112
9544	21	H72630	Hs.35382	ESTs
2384	21	AA424282	Hs.91728	Human 75-KD autoantigen (PM-Scl) mRNA complete cds
25185	21	AA027837	Hs.30705	Reelin-like protein 3 (X-linked recessive)
24348	21	V086489	Hs.77189	Tropomyosin alpha chain (breast muscle)
41401	21	R43334	Hs.55075	Human sapiens KIAA0410 mRNA complete cds
35340	21	AA388900	EST - RC_AA388900	EST - RC_AA388900
10895	21	AA112083	Hs.15313	ESTs Weakly similar to PRE-MRNA SPLICING HELICASE 8TR2 (S. cerevisiae)
381	21	D28473	Hs.78770	Isoluciferin-RNA synthetase
22051	21	R49047	Hs.31915	ESTs Weakly similar to IIII ALU SUBFAMILY J WARNING ENTRY III [K.sapiens]
33930	21	M94893	Hs.2051	Testis specific protein Y-linked
11528	21	AA356018	Hs.10724	ESTs Weakly similar to unknown [S. cerevisiae]
11990	21	AA278323	Hs.17481	Human sapiens clone 24606 mRNA sequence
13643	21	AA459578	Hs.12017	Human sapiens clone 24477 mRNA sequence
19827	21	H71829	Hs.25701	ESTs
38611	21	AA429632	Hs.121018	ESTs
2130	21	L40407	Hs.9731	Human sapiens thyroid receptor interaction (TRIP9) gene complete cds
7193	21	AA046763	Hs.49476	Human sapiens clone TUA3 Cdk-2-3rd region mRNA
5448	21	X02781	Hs.69655	Naucleotoma PAS (viral) oncogene homolog
33956	21	AA112333	Hs.105971	ESTs
7325	21	AA110259	Hs.105971	ESTs
35992	21	PD351	Hs.16482	ESTs Weakly similar to weakly similar to S. cerevisiae PTM1 (plecussin) [C. elegans]
28029	21	AA478479	Hs.71992	ESTs
18425	21	AQ32105	Hs.59112	ESTs
25494	21	T10045	Hs.16987	ESTs Weakly similar to HYPOTHETICAL 33.2 KD PROTEIN F2B43.7 IN CHROMOSOME 1 [C. elegans]
30882	21	H59908	Hs.47966	EST
32597	21	T47333	Hs.77298	Human TFIID subunit TAF15 (TAF15) mRNA complete cds
33388	21	V080814	Hs.47283	ESTs
10258	21	R77527	Hs.29845	ESTs
21882	21	R43365	Hs.22279	ESTs
20590	21	N58146	Hs.34227	ESTs
13907	21	AA427577	Hs.26502	ESTs
22958	21	T10284	Hs.116122	ESTs
4210	21	T58753	Hs.24003	ESTs
39	21	U31814	Hs.3352	Human transcriptional regulator homolog RPD3 mRNA complete cds
14350	21	AB003698	Hs.28853	Human sapiens mRNA for Cdc2-related kinase complete cds
25940	21	AA588881	Hs.17121	ESTs
25593	21	N21680	Hs.43047	ESTs
28071	21	AA113145	Hs.8130	Human sapiens PL-1 (PL-1) mRNA complete cds
	21	AQ388860	Hs.118970	Protein phosphatase 2A regulatory subunit B #p2a-1

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## FIGURE 3 (CONT.)

26529	21	AA278564	Hs.25461	EST	
12154	21	AA291253	Hs.25219	ESTs	
18117	21	F10077	Hs.12895	ESTs	
6635	21	X39585	Hs.92162	H.sapiens mRNA for SMT3B protein	
6681	21	Y03971	Hs.2910	Phosphoribosyl pyrophosphate synthetase 2	
22077	21	R49482	Hs.5637	ESTs	
11752	21	AA256042	Hs.24505	ESTs	
41257	21	R31680	Hs.140902	ESTs	
6804	21	Z34897	Hs.1570	Histamine receptor H1	
18879	21	AA056535	Hs.53314	ESTs	
38040	21	AA481403	Hs.107213	ESTs	
4111	21	U93312	Hs.83550	Human heterochromatin protein HP1-hs-gamma mRNA complete cds	
32878	21	V07448	Hs.41241	ESTs	
31743	21	R00768	Hs.21590	ESTs Moderately similar to [H] ALL SUBFAMILY SX WARNING ENTRY [H] [H.sapiens]	
21968	21	AA234935	Hs.65032	ESTs	
24658	21	Z39211	Hs.12290	Homo sapiens GDP-L-ascorbate pyrophosphorylase (GPP) mRNA complete cds	
38030	21	AA481146	Hs.105157	ESTs	
61	20	AC021115	Hs.63379	Cytochrome c oxidase subunit IVb	
6306	20	X31625	Hs.77324	EUKARYOTIC PEPTIDE CHAIN RELEASE FACTOR SUBUNIT 1	
8203	20	AA392317	EST - AA392317		
34357	20	AA251430	Hs.5550	ESTs Highly similar to RAS-RELATED PROTEIN RAB-10 [Caenorhabditis]	
36972	20	AA442767	Hs.5049	Tyrosine 3-monooxygenase/hydrophobic 3-monooxygenase activation protein beta polypeptide	
28156	20	AA489057	Hs.8217	H.sapiens mRNA for nuclear protein SA-2	
24434	20	V82787	Hs.17242	ESTs	
33508	20	W88772	Hs.30546	Human DNA sequence from cosmid F0811 on chromosome 6. Contains Daxx (BING1), Tapasin (RG-2), KEZ, BING4, BING5, ESTs and CPG islands	
37681	20	AA480675	Hs.31748	H.sapiens mRNA for TRE5	
27125	20	AA405505	Hs.48295	Homo sapiens mRNA for putative RNA helicase 3' end	
3760	20	U09851	Hs.112180	Zinc finger protein 148 (pH2-52)	
8112	20	D16611	Hs.83966	Copeptidylprolylase (copper-binding protein)	
8357	20	AA418921	Hs.10325	ESTs Highly similar to RSPS PROTEIN [Saccharomyces cerevisiae]	
8133	20	D30946	Hs.28991	ESTs Highly similar to TRANSLOCATOR-ASSOCIATED PROTEIN GAMMA SUBUNIT [Rattus norvegicus]	
7519	20	AA454325	EST - AA454325_5		
14703	20	D36324	Hs.124652	ESTs	
380	20	D38423	EST - D38423		
30571	20	N48395	Hs.46837	ESTs	
825	20	D37328	Hs.79375	Holo-carboxylase synthetase (Dihydroxyisopropyl)-Coenzyme A-carboxylase (ATP-hydrolyzing) ligase	
27744	20	AA452818	Hs.87385	ESTs Weakly similar to HYPOPHOSPHATE PROTEIN HMO24 [Hemophilus influenzae]	
3987	20	U19906	Hs.2131	Arginine vasopressin receptor 1 (AVPR1)	
22717	20	R91394	EST - RC_R91394		
377	20	D26384	EST - D26384		
28581	20	C21163	Hs.88503	EST	
11790	20	AA256978	Hs.17035	ESTs Highly similar to POP2 PROTEIN [Saccharomyces cerevisiae]	
37331	20	AA478523	Hs.113613	ESTs Weakly similar to [H] ALL SUBFAMILY J WARNING ENTRY [H] [H.sapiens]	
24674	20	Z39349	Hs.16575	ESTs Weakly similar to VACUOLAR ATP SYNTHASE 5A KD SUBUNIT [Saccharomyces cerevisiae]	
10940	20	AA122317	Hs.19845	ESTs Weakly similar to HYPOPHOSPHATE PROTEIN HMO24 [Hemophilus influenzae]	
13864	20	AA478048	Hs.42620	ESTs	
13865	20	V87804	Hs.12342	Homo sapiens clone 24538 mRNA sequence	
26379	20	AA408710	Hs.42582	ESTs	
13549	20	AA445289	Hs.21198	ESTs Weakly similar to MITOCHONDRIAL PRECURSOR PROTEINS IMPORT RECEPTOR [Neurospora crassa]	
7322	20	AA090592	Hs.135552	ESTs Weakly similar to The KIAA0138 gene product is novel. [H.sapiens]	
29358	20	H70841	EST - RC_H70841		
24230	20	V72276	Hs.5950	ESTs	
40212	20	H88535	Hs.5584	Human clone 12171 defective manner transposon Hsmar2 mRNA sequence	
729	20	D33778	Hs.77898	Human mRNA for KIAA0194 gene partial cds	
17951	20	AA165558	Hs.3833	Homo sapiens clonational ATP sulfolysase/deadonase 5'-phosphatase kinase mRNA complete cds	
33943	20	AA171739	Hs.101590	ESTs	
5070	20	X59244	Hs.74107	Zinc finger protein 43 [HTF5]	
36319	20	AA425107	Hs.97516	ESTs	
25654	20	AA128851	Hs.110857	ESTs Weakly similar to DNA-directed RNA polymerase [D melanogaster]	
16344	20	AA018807	Hs.5427	ESTs	

## FIGURE 3 (CONT.)

B118	20	AA328993	Hs.104656	ESTs
29962	20	N25228	Hs.27349	ESTs
32236	20	R49327	Hs.57435	Natural resistance-associated macrophage protein 2
3279	20	M94065	Hs.64925	DIHYDROXYACETATE DEHYDROGENASE PRECURSOR
18255	20	AA013349	Hs.60602	ESTs
37972	20	AA479215	EST - RC_AA479215	ESTs
41256	20	R31977	Hs.30696	ESTs
34834	20	AA292655	Hs.96557	ESTs
23169	20	T33215	Hs.110203	ESTs
29851	20	N21146	Hs.43994	ESTs
32862	20	N22519	Hs.55510	EST

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## FIGURE 4

Primary Key	Accession	Unigene	Unigene Description
33616	U63728	CLUSTER	Unigene Description
34197	A2232315	Hs.55279	Protease inhibitor 6 (maspin)
19397	H20128	Hs.12540	Human sapiens clone 23787 and 23917 mRNA partial cds
18262	A4330771	Hs.31656	ESTs
39995	A4233812	Hs.82911	Human protein-tyrosine phosphatase (HU-PP-1) mRNA partial sequence
18328	H62474	Hs.12013	Ribonuclease L (2'-5'-oligoadenylate synthetase-dependent) inhibitor
39590	H17808	Hs.108240	EST
39456	A4589648	Hs.22858	ESTs
17559	A4504343	Hs.78202	Human mRNA for transcriptional activator hSNF2b complete cds
6106	X70893	Hs.101074	ESTs
8648	A4455016	Hs.71190	ESTs
5619	X14850	Hs.83484	SRY (sex determining region Y-box 4
5603	X14253	Hs.69423	Human sapiens serine protease-like protease (nest1) mRNA complete cds
37677	A4480330	Hs.2711	HISTONE H2A.X
11561	A4236533	Hs.75591	Tetradocarcinoma-derived growth factor 1
16490	A4026418	Hs.93384	Human sapiens orphan G protein-coupled receptor HG38 mRNA complete cds
32240	R03976	Hs.19222	Ex-1
12480	A403116	Hs.91539	ESTs
2144	L41349	Hs.12033	Ribonuclease L (2'-5'-oligoadenylate synthetase-dependent) inhibitor
33006	A4300991	Hs.9880	Human sapiens UBR1P-associated cyclophilin (USA-Cyp) mRNA complete cds
39535	F02450	Hs.17296	ESTs
8449	X89386	Hs.107039	ESTs Weakly similar to ZK1058.5 (C. elegans)
37653	L30249	Hs.32938	H. sapiens mRNA for NBK apoptotic inducer protein
4178	H96879	Hs.96513	ESTs
19787	L18161	Hs.110735	Human bumetanide-sensitive Na-K-Cl cotransporter (NKCC1) mRNA complete cds
8692	A4315272	Hs.121641	TRANSLATIONAL INITIATION FACTOR 2 GAMMA SUBUNIT
10747	A4055841	Hs.37262	ESTs
5002	U72781	Hs.24550	ESTs
33791	Z40983	Hs.31953	ESTs
13136	A438560	Hs.8990	Human karyopharin beta 3 mRNA complete cds
5963	XG3529	Hs.65568	ESTs
38179	N59561	Hs.2941	NEUROMEDIN U-25 PRECURSOR
17987	A4169379	Hs.7327	ESTs
36695	A4433910	Hs.2877	Cadherin 3 (P-cadherin)
10233	RT1427	Hs.76272	Human sapiens clone 23592 mRNA sequence
38330	A4490882	Hs.84988	Cathepsin B
1349	A442082	Hs.72865	ESTs
39962	X05360	Hs.98786	ESTs
5510	M69541	Hs.9081	ESTs Highly similar to PHENYLALANYL-TRNA SYNTHETASE ALPHA CHAIN CYTOPLASMIC (Saccharomyces cerevisiae)
17734	A4137246	Hs.112227	EST - HG4747-RT5195
36371	A4425017	Hs.131915	ESTs
459	D38293	Hs.59393	Cell division cycle 2 G1 to S and G2 to M
17419	AA113349	Hs.73828	Protein tyrosine phosphatase non-receptor type 4
14054	U73524	Hs.84980	ESTs
5021	U73524	Hs.109781	ESTs
4954	U73524	Hs.77770	Human mRNA for diaphryn-like protein complete cds
		Hs.69588	EST
		Hs.34892	ESTs
		Hs.87485	Human putative ATPGTP-binding protein (HEAB) mRNA complete cds
		Hs.12045	Human C2 mRNA complete cds

>10	A4256379	Hs.99291	ESTs	
>10	U43944	Hs.14732	MALATE OXIDOREDUCTASE	
>10	A0059892	Hs.14543	ESTs	
>10	A4323787	Hs.47770	ESTs	
>10	H20165	Hs.31734	EST	
>10	A34471	Hs.22365	ESTs Weakly similar to ORF_YOR295hw [S.cerevisiae]	
>10	R27975	EST - RC_R27975		
>10	X74987	Hs.12013	Ribonuclease L (2'-5'-oligoadenylate synthetase-dependent) inhibitor	
>10	R01634	Hs.110878	ESTs	
>10	X64810	Hs.78877	Protein convertase subtilisin/kexin type 1	
>10	A4243052	Hs.18399	ESTs Highly similar to GONADOTROPIN-RELEASING HORMONE RECEPTOR [Rattus norvegicus]	
>10	U57341	EST - U57341		
>10	F04022	Hs.27865	ESTs	
>10	W67277	Hs.17546	ESTs	
>10	A4504462	Hs.81771	Human L-hydrantine hydrolase mRNA complete cds	
>10	U57721	Hs.105730	ESTs	
>10	F09739	Hs.54401	Human mRNA for epolipoprotein E receptor 2 complete cds	
>10	Z95394	Hs.14542	ESTs Moderately similar to 1111 ALU SUBFAMILY SP WARNING ENTRY 1111 [H.sapiens]	
>10	AA191348	Hs.56178	ESTs	
>10	A0054438	Hs.60753	ESTs	
>10	Z98963	Hs.42186	ESTs	
>10	AA164288	Hs.28006	ESTs	
>10	HQ33444-HT3521	EST - HQ33444-HT3521		
>10	A4328168	Hs.22153	ESTs	
>10	AA132523	Hs.22800	Human sapiens BAC clone RG118C02 from 7p15	
>10	A54925	Hs.83199	Matrix metalloproteinase 1 (interstitial collagenase)	
>10	A0065300	Hs.75337	Human mRNA for KIAA0035 gene partial cds	
>10	AA133250	Hs.62190	ESTs	
>10	D55892	Hs.74574	Human Cx22-dependent activator protein for secretion mRNA complete cds	
>10	H52702	Hs.36690	ESTs	
>10	R42278	Hs.31748	H.sapiens mRNA for TRE5	
>10	R75111	Hs.29388	ESTs	
>10	AA406706	Hs.104748	ESTs	
>10	AA180223	Hs.8454	CAMP-DEPENDENT PROTEIN KINASE TYPE II-ALPHA REGULATORY CHAIN	
>10	AA464668	Hs.125128	Human sapiens Ran binding protein 2 (RanBP2alpha) mRNA partial cds	
>10	A3437193	Hs.77851	ESTs Weakly similar to NADH:UBIQUINONE OXIDOREDUCTASE CHAIN 4 [Caenorhabditis elegans]	
>10	L47216	EST - L47216		
>10	U39817	Hs.36820	Bloom syndrome	
>10	D30037	Hs.91447	PHOSPHATIDYLINOSITOL	
>10	N59230	Hs.18937	ESTs	
>10	X17644	Hs.2707	G1 to S phase transition 1	
>10	U40714	Hs.109631	Human tyrosyl-DNA synthetase mRNA complete cds	
>10	U07157	Hs.185	Glucagon-like peptide-1 receptor	
>10	Z38462	Hs.12403	ESTs	
>10	AA464632	Hs.123157	ESTs	
>10	A0084104	Hs.30177	ESTs	
>10	A0037268	Hs.113319	H.sapiens mRNA for kinesin-2	
>10	AB000905	Hs.143080	H.sapiens histone H4 gene	
>10	F09458	Hs.12421	ESTs	
>10	AA521409	Hs.112098	ESTs	
>10	N65423	Hs.105413	ESTs	
>10	R62591	Hs.28366	EST	
>10	AA620709	Hs.20563	ESTs Weakly similar to HYPOTHETICAL 90.8 KO PROTEIN T08H0.7 IN CHROMOSOME II [C.elegans]	
>10	U58440	Hs.129948	ESTs	
>10		Hs.42115	ESTs	

## FIGURE 4 (CONT.)

36405	AA425406	Hs.10811	Homo sapiens mRNA for KIAA0350 protein partial cds
4023	U21080	Hs.74538	Human DNA polymerase delta small subunit mRNA complete cds
15006	U30245	Hs.110738	Human bumetanide-sensitive Na-K-Cl cotransporter (NKCC1) mRNA complete cds
40594	N35388	Hs.112227	ESTs
31484	N69465	Hs.49683	ESTs
36601	AA596738	Hs.109041	ESTs
236	40631	N45124	ESTs
35803	D13545	Hs.8809	ESTs
13951	AA410235	Hs.2471	Human mRNA for KIAA0020 gene complete cds
35828	H40688	Hs.97911	ESTs
35758	AA609177	Hs.33755	ESTs
3163	AA410231	Hs.109383	ESTs
22400	M84424	Hs.96089	ESTs
35062	R64109	Hs.1355	Calthepin E
25062	AA620333	Hs.28487	ESTs
5857	AA017257	Hs.112857	EST
5214	U83303	Hs.101139	ESTs
36958	AA442060	Hs.1721	Human mRNA for adipogenesis inhibitory factor
40660	N49104	Hs.123029	H.sapiens mRNA for granulocyte chemotactic protein
25951	AA234556	Hs.87507	ESTs
22072	R49405	Hs.79108	NUCLEAR FACTOR RIP140
39832	H26279	Hs.135158	EST
23198	T40530	Hs.28410	ESTs
28331	H88116	Hs.8241	ESTs Weekly similar to B0035.14 [C.elegans]
38316	AA490500	Hs.39053	ESTs
37829	AA470084	Hs.18747	Homo sapiens ribonuclease P protein subunit p20 (RPP20) mRNA complete cds
3870	U14518	Hs.96359	ESTs
39176	AA621091	Hs.1594	Cantonese protein A (17AD)
41793	T03987	Hs.72087	ESTs
32277	R61493	Hs.7327	ESTs
5558	X07875	Hs.26896	Human mRNA for rod photoreceptor protein complete cds
5382	X85133	Hs.89781	Wingless-type MMTV integration site 2 human homolog
41040	N91948	Hs.85273	H.sapiens RBQ-1 mRNA
39080	AA620552	Hs.125004	ESTs
20307	N34830	Hs.37536	EST - RC_AA620552_1
18290	AA206801	Hs.86277	ESTs
41065	N93618	Hs.28554	ESTs
33109	V59561	Hs.22564	Human mRNA for KIAA0389 gene complete cds
28015	AA477421	Hs.21801	ESTs
30610	N50135	Hs.47032	EST
34015	AA191353	Hs.109584	ESTs
1445	N33024	Hs.23450	ESTs
13242	AA445964	Hs.73885	MHC class I protein HLA-G
37983	AA479348	Hs.21331	ESTs
42242	T89579	Hs.52871	H.sapiens mRNA for SYT
37135	AA447540	Hs.79353	Homo sapiens E2F-related transcription factor (DP-1) mRNA complete cds
20564	N55443	Hs.99112	EST
28141	AA488432	Hs.23625	ESTs
21240	R09513	Hs.56407	ESTs
34382	AA252512	Hs.20188	ESTs
25948	AA234365	Hs.10069	ESTs
40918	N69218	Hs.102456	Homo sapiens survival of motor neuron protein interacting protein 1 (SIP1) mRNA complete cds
35897	AA405512	Hs.108232	ESTs
34872	AA284372	Hs.104741	ESTs
		Hs.111471	ESTs

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## FIGURE 4 (CONT.)

3659	>10	U04313	Hs.55279	Protease inhibitor 5 (maspin)
17051	>10	AA072801	Hs.51615	ESTs
19203	>10	H17593	Hs.28716	ESTs
22791	>10	N69057	Hs.90357	Homo sapiens telomeric repeat binding factor (TRF1) mRNA complete cds
24215	>10	W69425	Hs.15767	ESTs
37246	>10	AA449311	Hs.98558	Homo sapiens mitotic checkpoint protein kinase (BUB1) mRNA complete cds
6790	>10	Y12394	Hs.3888	Homo sapiens importin-alpha homolog (SRP1 gamma) mRNA complete cds
28806	>10	AA149007	Hs.100871	EST
36307	>10	AA424803	Hs.99474	EST
25047	>10	AA011031	Hs.110182	ESTs
33343	>10	W79834	Hs.58559	ESTs Weakly similar to myotek [M.musculus]
5799	>10	X55330	Hs.111661	Asparaginylglucosaminidase
22623	>10	T84047	Hs.15428	ESTs
29523	>10	H88353	Hs.138312	ESTs Weakly similar to line-1 protein ORF2 [H.sapiens]
26291	>10	AA235422	Hs.142179	ESTs
35801	>10	AA410291	Hs.114121	ESTs
40064	>10	H72283	Hs.38483	Human mRNA for KIAA0265 gene partial cds
29795	>10	N20641	Hs.48230	ESTs Highly similar to HYPOTHETICAL MYELOID CELL LINE PROTEIN 3 [Homo sapiens]
5960	>10	X63575	Hs.89512	ATPase Cx++ transducing plasma membrane 2 (NOTE: redefinition of symbol)
37611	>10	AA458996	Hs.32970	Human signaling lymphocytic activation molecule (SLAM) mRNA complete cds
28274	>10	AA253011	Hs.89758	ESTs
37168	>10	AA447772	Hs.125153	ESTs
39433	>10	O52037	Hs.39650	Human thymidine kinase 2 (TK2) mRNA complete cds
1570	>10	K01389	EST - K01389	
30617	>10	N50646	Hs.47083	ESTs
35106	>10	AA371561	Hs.142355	EST Weakly similar to putative p150 [H.sapiens]
789	>10	D86971	Hs.78851	Human mRNA for KIAA0217 gene partial cds
4386	>10	U40622	Hs.21523	DNA repair protein XRCC4
31944	>10	N93193	Hs.80310	ESTs
13237	>10	AA443971	Hs.142498	ESTs Weakly similar to IIII ALU SUBFAMILY J WARNING ENTRY IIII [H.sapiens]
4157	>10	U28811	Hs.78979	Human Cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA complete cds
2123	>10	L40396	Hs.28956	Homo sapiens (clone s2271) mRNA fragment
26526	>10	AA342402	Hs.48729	ESTs
6479	>10	X91653	EST - X91653	
11869	>10	AA280670	Hs.24988	ESTs
37801	>10	AA458964	Hs.102940	ESTs
28844	>10	D12163	Hs.103262	ESTs
40604	>10	N38893	Hs.28578	Homo sapiens KIAA0428 mRNA complete cds
3913	>10	U16281	Hs.66576	Human MDA-7 (mda-7) mRNA complete cds
23759	>10	T90313	Hs.18732	ESTs
2857	>10	M58557	Hs.2173	Fucosyltransferase 4 (alpha (13) fucosyltransferase myeloid-specific)
34518	>10	AA278721	Hs.103104	ESTs
18008	>10	AA171895	Hs.30057	Homo sapiens clone 24749 and 24750 mRNA sequences
19001	>10	H02890	Hs.29885	ESTs
39488	>10	D60931	Hs.126021	ESTs
21360	>10	T58531	Hs.141905	ESTs
34105	>10	AA207123	Hs.130857	ESTs
38121	>10	AA485724	EST - RC_AA485724	
26090	>10	F13855	Hs.65638	ESTs Moderately similar to IIII ALU SUBFAMILY S61 WARNING ENTRY IIII [H.sapiens]
9723	>10	L44542	Hs.128923	ESTs
22515	>10	AA035540	Hs.1255	APOLIPOPROTEIN A1 REGULATORY PROTEIN-1
39218	>10	AA621330	Hs.114381	ESTs
20088	>10	N20054	Hs.20325	ESTs Weakly similar to putative p150 [H.sapiens]
33713	>10	Z39427	Hs.65748	ESTs
18392	>10	AA3227151	Hs.65748	ESTs
42390	>10	W40150	Hs.24485	Homo sapiens chromosome-associated polypeptide (HCAP) mRNA complete cds

**FIGURE 4 (CONT.)**

35693	>10	A405485	Hs.98564	ESTs Weakly similar to 1 complex tasi1-specific protein [C.elegans]
35500	>10	A400715	Hs.107479	ESTs
1866	>10	L18920	Hs.39880	MELANOMA-ASSOCIATED ANTIGEN 2
37658	>10	A423652	Hs.109465	ESTs Weakly similar to <i>III</i> ALU SUBFAMILY J WARNING ENTRY <i>III</i> [H.sapiens]
36298	>10	A446312	Hs.12143	ESTs Weakly similar to <i>III</i> ALU CLASS C WARNING ENTRY <i>III</i> [H.sapiens]
33020	>10	A46591	Hs.55968	ESTs Weakly similar to polypeptide N-acetylglucosaminyltransferase [H.sapiens]
27037	>10	A4400198	Hs.93753	ESTs
40827	>10	N64051	Hs.68920	Homo sapiens Werner syndrome gene complete cds
3375	>10	S50223	Hs.108642	HHR-11
37310	>10	A4451707	Hs.99246	ESTs
38235	>10	A4489030	Hs.105223	ESTs
22258	>10	R56432	Hs.26536	ESTs
36845	>10	A4438188	Hs.103902	ESTs
28233	>10	A4599639	Hs.92016	ESTs
30207	>10	N33920	Hs.4532	H.sapiens mRNA for dibucoulin
6494	>10	X32659	Hs.58523	H.sapiens mRNA for UDP-GlnNAc:polypeptide N-acetylglucosaminyl transferase
36288	>10	A4242502	Hs.99433	ESTs
37546	>10	A4456641	Hs.77501	Human beta-sarcoglycan A3b mRNA complete cds
4193	>10	L311116	Hs.77501	Human beta-sarcoglycan A3b mRNA complete cds
31777	>10	A4464960	Hs.115541	Homo sapiens Jak2 kinase mRNA complete cds
38260	>10	A4486791	EST - RC_A4486791	
2843	>10	M15343	Hs.76506	Eukaryotic translation initiation factor 4E
39045	>10	A4610077	Hs.102314	ESTs
35495	>10	A4A00527	Hs.111914	ESTs
3522	>10	S98267	Hs.74101	Spleen tyrosine kinase
22282	>10	R59197	Hs.21320	ESTs
32740	>10	T92350	Hs.91077	ESTs
37057	>10	A4446131	Hs.124918	ESTs
34107	>10	A4206469	Hs.96297	ESTs
34361	>10	AQ327023	EST - RC_A4232703	
33301	>10	W173893	Hs.58174	ESTs
765	>10	D86096	Hs.495	Prostaglandin E receptor 3 (subtype EP3) [alternative products]
7785	>10	AQ433375	EST - A4243375	
6241	>10	A4196540	Hs.6592	ESTs
3470	>10	X67155	Hs.75530	MITOTIC KINESIN-LIKE PROTEIN-1
33890	>10	HUNTERPBM11507	AFPPX-HUNTERPBM11507_5	
35277	>10	A4398536	Hs.97365	ESTs
26059	>10	AQ236885	Hs.69940	ESTs
22501	>10	A4146530	EST - RC_A4146530	
32568	>10	R55823	Hs.26434	ESTs
34554	>10	A4200016	Hs.90297	DNA polymerase gamma
32034	>10	N98026	Hs.55299	ESTs Moderately similar to DNR-N9 PROTEIN [H.sapiens]
4787	>10	U51145	Hs.77256	Human enhancer of zeta homolog 2 (EHZ2) mRNA complete cds
1884	>10	L07341	Hs.9569	Replication factor C (activator 1) 3 (89CD)
18718	>10	F04915	Hs.22226	ESTs
40427	>10	N21147	Hs.121888	ESTs
32535	>10	T61116	Hs.90297	ESTs
4306	>10	U36788	Hs.7777	Homo sapiens platelet cGMP-PDE mRNA complete cds
39211	>10	A4489887	Hs.142639	ESTs
6408	>10	X98089	Hs.78853	UBAC1-DNA GLYCOSYLASE 1 PRECURSOR
36590	>10	A4595545	Hs.141444	ESTs
4945	>10	U59108	Hs.29736	Homo sapiens mRNA for TRAF5 complete cds
41954	>10	R76437	Hs.2001	THROMBOXANE-A SYNTHASE
41163	>10	R08176	Hs.20116	ESTs
34400	>10	A4253400	Hs.104326	ESTs
35927	>10	A4411144	Hs.104788	ESTs

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## FIGURE 4 (CONT.)

26628	AA280641	Hs.40128	ESTs highly similar to 60S RIBOSOMAL PROTEIN L39 [Rattus norvegicus]
40204	H88296	EST - RC_H88296	
19164	H10395	EST	
26240	AA252282	Human mRNA for KIAA0152 gene complete cds	
8963	HUJUTERRA11507	AFEX-HUJUTERRA11507.M	
35222	AA358710	Hs.87195	H. sapiens RNA for CLC3
1210	HG37-HT37	EST - HG37-HT37	
22793	R66208	Hs.35533	ESTs
36052	AA417027	Hs.104787	EST
26574	AA279504	Hs.88629	ESTs
35187	AA381120	Hs.97504	ESTs
37579	AA476195	Hs.106290	ESTs highly similar to RING CANAL PROTEIN [Drosophila melanogaster]
4862	U65437	Hs.95838	Human homeodomain-containing protein (HAMP) mRNA complete cds
29700	AA282197	Hs.89002	EST
35049	AA350857	Hs.22507	ESTs
40083	H73486	Hs.79086	MITOCHONDRIAL 60S RIBOSOMAL PROTEIN L3
17541	AA127459	Hs.108788	ESTs
19549	U45860	Hs.124151	ESTs
4477	AA331393	Hs.37137	Human LAP-like protein (LP) mRNA complete cds
26516	AA228030	Hs.47378	ESTs
34186	AA228030	Hs.120234	ESTs
29229	H48459	Hs.36532	Human mRNA for KIAA0189 gene complete cds
42773	YELQ19C/MMS21	EST - YELQ19C/MMS21	
32189	R43183	Hs.95044	ESTs
36739	AA435610	EST - RC_AA435610	
31310	H68931	Hs.49269	EST
26545	AA278879	Hs.88647	ESTs
21902	R43922	Hs.22691	EST
25925	AA184494	Hs.28417	ESTs highly similar to CYCLIC-AMP-DEPENDENT TRANSCRIPTION FACTOR ATF-8 [H.sapiens]
29344	H68939	Hs.38782	EST
1346	HG4716-HT5158	EST - HG4716-HT5158	
218	D13540	Hs.22869	PROTEIN-TYROSINE PHOSPHATASE 2C
28100	AA242635	Hs.5917	Human mRNA for KIAA0391 gene complete cds
41593	R64128	Hs.43745	ESTs
42290	T85105	Hs.142670	ESTs
6713	Y08564	EST - Y08564	
33377	W81218	Hs.42636	ESTs highly similar to F4686.7 [C.elegans]
31619	N73449	Hs.50273	ESTs
26718	AA282576	Hs.49407	ESTs
21558	R33112	Hs.100469	Human AF 6 mRNA complete cds
40113	H78003	Hs.15286	ESTs
10801	AA069285	Hs.9622	ESTs highly similar to PROBABLE UBICUITIN CARBOXYL-TERMINAL HYDROLASE RT0E11.3 [C.elegans]
37491	AA455239	Hs.87830	ESTs highly similar to CHROMOSOME CONDENSATION PROTEIN CPY-27 [Caenorhabditis elegans]
254	D14657	Hs.81892	Human mRNA for KIAA0101 gene complete cds
29693	H97819	Hs.42453	ESTs
26525	AA278392	Hs.43881	ESTs
13110	AA435840	Hs.19114	Human mRNA for high mobility group protein HMG2a
34863	AA399784	Hs.36641	EST
39432	D51691	Hs.82285	Phosphoribosylglycinamide formyltransferase phosphoribosylglycinamide synthetase phosphoribosylamimidazole synthetase
31572	N71294	Hs.110524	ESTs
17903	AA160259	Hs.72354	EST
20747	N66942	Hs.16395	ESTs
4676	U55206	Hs.78619	Human gamma-glutamyl hydrolase (GGH) mRNA complete cds
34083	AA351587	Hs.10801	Human mRNA for KIAA0539 protein partial cds
35094	AA620536	Hs.112264	ESTs
3888	U15128	Hs.36573	Human beta-12-N-acetylglucosaminyltransferase II (MGAT2) gene complete cds



## FIGURE 4 (CONT.)

30386	D12184	Hs.3350	ESTs	Hs.3350	ESTs
4192	U10389	Hs.421479	Human DP postreceptor (PTGDR) mRNA partial cds	Hs.421479	Human DP postreceptor (PTGDR) mRNA partial cds
4507	U10750	Hs.24852	Human putative calcium influx channel (hup3) mRNA complete cds	Hs.24852	Human putative calcium influx channel (hup3) mRNA complete cds
33606	AA022227	Hs.97345	ESTs Moderately similar to Nitrophenol [R. norvegicus]	Hs.97345	ESTs Moderately similar to Nitrophenol [R. norvegicus]
19829	Hs.8813	Hs.37629	EST	Hs.37629	EST
14837	Hs.740145	Hs.21821	ESTs	Hs.21821	ESTs
17336	AA095595	Hs.41175	ESTs	Hs.41175	ESTs
29496	Hs.85434	Hs.40672	EST	Hs.40672	EST
26943	N24786	Hs.42993	ESTs Moderately similar to [H. ALU SUBFAMILY J WARNING ENTRY III] [H. sapiens]	Hs.42993	ESTs Moderately similar to [H. ALU SUBFAMILY J WARNING ENTRY III] [H. sapiens]
17907	AA168833	Hs.72835	EST	Hs.72835	EST
13853	AA176917	Hs.34627	ESTs Weakly similar to No definition line found [C. elegans]	Hs.34627	ESTs Weakly similar to No definition line found [C. elegans]
30539	N46072	Hs.93968	ESTs	Hs.93968	ESTs
26380	AA327012	Hs.88054	EST	Hs.88054	EST
40812	N53419	Hs.83388	ESTs	Hs.83388	ESTs
503	D50070	Hs.96	ATI-derived PMA-responsive (APR) peptide	Hs.96	ATI-derived PMA-responsive (APR) peptide
22674	R87180	Hs.33965	ESTs	Hs.33965	ESTs
15244	W05504	Hs.8037	ESTs	Hs.8037	ESTs
18069	AA090467	Hs.82489	ESTs	Hs.82489	ESTs
19602	H47351	Hs.33947	ESTs	Hs.33947	ESTs
2548	M25897	Hs.81964	Platelet factor 4	Hs.81964	Platelet factor 4
7736	AA232121	Hs.109631	Human tyrosyl-RNA synthetase mRNA complete cds	Hs.109631	Human tyrosyl-RNA synthetase mRNA complete cds
39939	H53454	EST - RC_H53454	EST - RC_H53454	EST - RC_H53454	EST - RC_H53454
25111	AA020787	Hs.110291	ESTs	Hs.110291	ESTs
21555	R38239	Hs.25276	EST	Hs.25276	EST
27074	AA014175	Hs.39733	ESTs Weakly similar to C3691.3 [C. elegans]	Hs.39733	ESTs Weakly similar to C3691.3 [C. elegans]
4959	U70322	Hs.82825	Human transposon (TRN) mRNA complete cds	Hs.82825	Human transposon (TRN) mRNA complete cds
2315	M41423	EST - M41423_xp1	EST - M41423_xp1	EST - M41423_xp1	EST - M41423_xp1
37253	AA448337	Hs.17731	ESTs	Hs.17731	ESTs
39624	F10636	Hs.101234	ESTs	Hs.101234	ESTs
23213	T40891	Hs.8330	ESTs	Hs.8330	ESTs
2798	M54995	Hs.2164	Connective tissue activation peptide III	Hs.2164	Connective tissue activation peptide III
32479	T16282	Hs.75188	WEE1-LIKE PROTEIN KINASE	Hs.75188	WEE1-LIKE PROTEIN KINASE
19091	H06701	Hs.27948	ESTs Weakly similar to RHOMBOTIN-1 [H. sapiens]	Hs.27948	ESTs Weakly similar to RHOMBOTIN-1 [H. sapiens]
21098	R00545	Hs.18930	ESTs	Hs.18930	ESTs
14723	D59884	Hs.34782	ESTs	Hs.34782	ESTs
37154	AA447686	Hs.77204	Human CENP-F kinetochore protein mRNA complete cds	Hs.77204	Human CENP-F kinetochore protein mRNA complete cds
9009	AA313397	Hs.133101	ESTs Highly similar to HYPOTHETICAL B4.7 NO PROTEIN ZK1068.1 IN CHROMOSOME III [Caenorhabditis elegans]	Hs.133101	ESTs Highly similar to HYPOTHETICAL B4.7 NO PROTEIN ZK1068.1 IN CHROMOSOME III [Caenorhabditis elegans]
7485	AA129547	Hs.61888	ESTs	Hs.61888	ESTs
16501	AA026969	Hs.61423	ESTs	Hs.61423	ESTs
34527	AA275091	Hs.104420	ESTs	Hs.104420	ESTs
6700	Y07967	Hs.38942	H. sapiens mRNA for Plin isolate 1	Hs.38942	H. sapiens mRNA for Plin isolate 1
2852	M59460	Hs.91728	Human 75-KD autoantigen (PM-Sc1) mRNA complete cds	Hs.91728	Human 75-KD autoantigen (PM-Sc1) mRNA complete cds
11168	AA172372	Hs.20608	ESTs	Hs.20608	ESTs
42293	T95333	Hs.122730	ESTs Weakly similar to coded for by C. elegans cDNA yk10g8.3 [C. elegans]	Hs.122730	ESTs Weakly similar to coded for by C. elegans cDNA yk10g8.3 [C. elegans]
5443	X02530	Hs.2248	Interferon (gamma)-induced cell line protein 10 from	Hs.2248	Interferon (gamma)-induced cell line protein 10 from
23371	T59505	EST - RC_T59505	EST - RC_T59505	EST - RC_T59505	EST - RC_T59505
17306	AA088201	Hs.92702	ESTs	Hs.92702	ESTs
18497	AA233795	Hs.65928	ESTs	Hs.65928	ESTs
235	D13544	Hs.140933	Human mRNA for KIAA0019 gene complete cds	Hs.140933	Human mRNA for KIAA0019 gene complete cds
24625	Z38347	Hs.118338	ESTs	Hs.118338	ESTs
7626	AA248884	EST - AA248884	EST - AA248884	EST - AA248884	EST - AA248884
32142	R36715	Hs.123918	Homo sapiens clone 24540 mRNA sequence	Hs.123918	Homo sapiens clone 24540 mRNA sequence
39067	AA620405	Hs.112860	ESTs	Hs.112860	ESTs
8235	X78416	Hs.3155	Casain alpha S1	Hs.3155	Casain alpha S1
28517	H88251	Hs.41116	ESTs	Hs.41116	ESTs
39344	C21034	Hs.78822	ESTs Moderately similar to initiation factor eIF-2B gamma subunit [R. norvegicus]	Hs.78822	ESTs Moderately similar to initiation factor eIF-2B gamma subunit [R. norvegicus]

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## FIGURE 4 (CONT.)

18951	7.9	Hs0580	Hs2889 ESTs	
18953	7.9	Hs0615	Hs2427 ESTs	
18376	7.9	AA226925	Hs88057 ESTs	
35023	7.8	AA416881	Hs87383 ESTs	
2192	7.8	L48211	Hs20854 Homo Sapiens angiotensin II receptor gene complete cds	
33016	7.8	VM6577	Hs41716 H.sapiens mRNA for ESM-1 protein	
40814	7.7	N35287	Hs99201 ESTs	
36395	7.7	AA424534	Hs98415 ESTs	
18584	7.7	Hs8803	Hs32638 ESTs	
18914	7.7	AA358665	Hs23744 ESTs	
33967	7.6	AA412594	Hs6891 Human splicing factor Srp55-2 (SRP55) mRNA complete cds	
21672	7.6	R38835	Hs12328 ESTs	
19918	7.6	Hs9787	Hs14669 ESTs	
17721	7.6	AA136590	Hs71711 ESTs	
26134	7.6	AA243763	Hs87694 ESTs	
16766	7.6	FO6487	Hs12755 ESTs	
34492	7.5	AA382439	Hs96 ATL-derived RNA-responsive (APR) peptide	
270	7.5	D14822	EST - D14822	
33975	7.4	AA412738	Hs3698 ESTs	
28642	7.4	N21588	Hs43550 ESTs	
5763	7.4	X54942	Hs83758 COC28 protein kinase 2	
31571	7.4	N71250	Hs50004 ESTs	
22785	7.4	T90443	Hs15053 ESTs Weakly similar to KIAA0379 [H.sapiens]	
35123	7.3	AA380927	Hs97113 EST	
33252	7.3	AA485247	Hs105234 ESTs	
33218	7.3	AA488861	Hs134943 ESTs	
28418	7.2	H77915	EST - RC_H77915	
42504	7.2	W69803	Hs103159 ESTs	
6111	7.2	X71125	Hs79039 H.sapiens mRNA for glutamine cyclotransferase	
41773	7.2	T03024	Hs29170 ESTs Weakly similar to ribosomal protein L7 [H.sapiens]	
9851	7.1	N71513	Hs39328 ESTs	
29109	7.1	AA485212	Hs6591 ESTs	
988	7.1	HG2160-HT230	EST - HG2160-HT230	
28949	7.1	N22107	Hs124215 ESTs	
36528	7.1	N50744	Hs124023 ESTs	
22567	7.0	R77771	Hs128445 ESTs	
9347	7.0	Hs0698	Hs112013 ESTs	
11896	7.0	AA352884	Hs20474 ESTs	
40584	7.0	N24870	Hs102520 EST	
193	7.0	D10923	Hs137555 PROBABLE G PROTEIN-COUPLED RECEPTOR HW74	
18305	7.0	AA216048	Hs259 Collagen type IV alpha 4	
8078	7.0	X59141	Hs48976 FARNESYL-PHOSPHATE FARNESYL-TRANSFERASE	
28741	6.9	AA383198	Hs89113 ESTs	
35069	6.8	AA353397	Hs97007 EST	
23504	6.8	T71042	Hs12068 ESTs	
289	6.8	D16515	Hs37288 Homo sapiens orphan nuclear hormone receptor BD73 mRNA 3' end	
40583	6.8	N24855	Hs109099 ESTs	
39524	6.9	F01905	Hs14732 MALATE OXIDOREDUCTASE	
34578	6.8	AA283837	Hs111429 ESTs	
6328	6.8	D39377	Hs89404 Msh1 (Drosophila homeobox homolog 2)	
19188	6.8	H11255	Hs12887 ESTs Highly similar to ACTIN-LIKE PROTEIN [Bas. taurus]	
16165	6.8	AA194963	Hs81791 Homo sapiens mRNA for osteostatin-inhibitory factor (OCIF) complete cds	
1566	6.7	J05614	EST - J05614	
25675	6.7	AA123757	Hs54802 ESTs Highly similar to 60S RIBOSOMAL PROTEIN L22 [Rattus norvegicus]	
5814	6.7	X56088	Hs1644 CYTOCHROME P450 VI	
13881	6.6	AA470145	Hs25130 ESTs	

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## FIGURE 4 (CONT.)

20794	8.6	N20598	Hs 94288	ESTs	
33333	6.6	C20910	Hs 23960	Cyclin B1	
3770	6.6	U09609	Hs 73090	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 2 (p49/p100)	
31831	6.6	N89894	Hs 91454	ESTs	
33063	6.6	Y65000	Hs 56155	Homo sapiens clone 24431 mRNA sequence	
20326	6.6	N35583	Hs 8788	ESTs Weakly similar to PROBABLE E5 PROTEIN [Human papillomavirus type 58]	
42566	6.5	W65900	Hs 109333	ESTs	
39606	6.5	F10243	Hs 140873	ESTs Weakly similar to IIII ALU CLASS B WARNING ENTRY IIII [H sapiens]	
14617	6.5	C14683	Hs 37380	ESTs	
27360	6.4	AA425356	Hs 89306	ESTs	
20126	6.4	N22015	Hs 18467	ESTs	
6663	6.4	Y02261	Hs 82783	RETINOIC ACID RECEPTOR BETA-2	
36472	6.4	AA428633	Hs 98604	EST	
9578	6.4	H87652	Hs 24612	Homo sapiens bicucullin-D (BICD) mRNA complete cds	
37308	6.4	AA451594	Hs 89244	EST	
16101	6.4	AA002147	Hs 59592	EST	
20629	6.3	N59798	Hs 18917	ESTs	
36100	6.3	AA417740	Hs 95345	ESTs	
32882	6.3	N37663	Hs 55080	ESTs	
18072	6.3	AA180448	Hs 144300	EST	
29125	6.3	AA486073	Hs 57362	ESTs	
37464	6.2	AA454747	Hs 14934	ESTs	
1441	6.2	J03963	Hs 7985	Integrin alpha 2b (platelet glycoprotein IIb of IIb/IIIa complex antigen CD41B)	
6061	6.1	X89314	Hs 2704	Glutathione peroxidase 2 gastrointestinal	
32570	6.1	T30222	Hs 4220	ESTs Weakly similar to IIII ALU SUBFAMILY J WARNING ENTRY IIII [H sapiens]	
32504	6.1	T17063	Hs 85721	EST	
10867	6.1	AA088458	Hs 19322	ESTs Weakly similar to IIII ALU SUBFAMILY J WARNING ENTRY IIII [H sapiens]	
14528	6.1	AA620295	Hs 59821	ESTs	
29454	6.1	H61308	Hs 40253	EST	
21940	6.0	R44538	Hs 140869	ESTs	
29066	6.0	F10927	Hs 69163	Homo sapiens clone 23536 mRNA sequence	
18062	6.0	AA178945	Hs 73625	ESTs Moderately similar to rabinin-5 [M musculus]	
41745	6.0	R95895	Hs 142877	ESTs	
8787	6.0	AA504307	Hs 90204	X-LINKED HELICASE II	
693	5.9	D80007	Hs 45028	Human mRNA for KIAA0185 gene partial cds	
4093	5.9	U25182	Hs 63383	Human ribonuclease H1 mRNA complete cds	
1192	5.9	HG3546-HT3744	EST - HG3546-HT3744		
22956	5.9	T10248	Hs 4280	ESTs	
36723	5.9	AA435524	Hs 97483	EST	
2114	5.9	L40384	EST - L40384		
26872	5.9	AA231137	Hs 109270	ESTs	
6602	5.9	X95296	EST - X95296_cds2		
42701	5.9	Z39612	Hs 144000	ESTs	
28573	5.9	C21118	Hs 84541	ESTs	
18290	5.8	AA211801	Hs 86430	ESTs	
5330	5.8	U81327	EST - U81327		
26167	5.8	M26167	Hs 72933	Human platelet factor 4 variant 1 (PF4vnt1) gene complete cds	
38180	5.8	AA487485	EST - RC_AA487485		
4244	5.7	U18891	Hs 90073	Human chromosome segregation gene homolog CAS mRNA complete cds	
3977	5.7	Z39301	Hs 2133	Retinal pigment epithelium-specific protein (RPE)	
24673	5.7	Z46829	Hs 7959	ESTs	
6628	5.7	AA609733	Hs 2316	SRF (ser-determining region Y)-box 5 (campomelic dysplasia autosomal sex-reversal)	
39726	5.7	C14573	Hs 138663	ESTs	
39290	5.7	AA322231	Hs 75383	Human mRNA for KIAA0029 gene partial cds	
11405	5.7	X82279	Hs 24596	ESTs	
6329	5.6	X82279	EST - X82279		

## FIGURE 4 (CONT.)

2545	5.9	M25753	Hs.23860	Cyclin B1
33552	5.6	W93127	Hs.59422	ESTs
28843	5.6	D60262	Hs.113619	ESTs
6160	5.6	X74794	Hs.89699	CCD21 HOMOLOG
42515	5.5	W72116	Hs.106333	Homo sapiens clone 23622 mRNA sequence
4732	5.5	U59522	Hs.84713	Human huntingtin interacting protein (HIP2) mRNA complete cds
3259	5.5	H55623	Hs.82609	Hydroxymethylglutaryl synthase
28320	5.5	AA399574	Hs.83370	ESTs
745	5.5	D94454	Hs.21859	Human mRNA for UDP-galactose 4-epimerase complete cds
3117	5.4	M81182	Hs.76781	Perforin membrane protein 1 (70kD Zalkwerger syndrome)
21257	5.4	R09196	Hs.20321	ESTs Moderately similar to M-phase phosphoprotein 11 [H sapiens]
31487	5.4	N93507	Hs.129849	ESTs
28954	5.4	F03153	Hs.80393	ESTs
39928	5.4	AA605955	Hs.109680	ESTs
29003	5.4	N23366	Hs.93664	EST
28209	5.3	AA491250	Hs.54990	ESTs
9470	5.3	H48617	EST - H48617	
9435	5.3	H30201	EST - H30201	
27411	5.3	AA428137	Hs.86434	ESTs
30615	5.3	N50556	Hs.47076	ESTs
29634	5.3	N24194	Hs.43531	ESTs
1094	5.2	HG2846-HT2983	EST - HG2846-HT2983	
11232	5.2	AA188804	Hs.25740	ESTs Weekly similar to unknown [S. cerevisiae]
26843	5.2	AA237450	Hs.93642	ESTs
8035	5.2	AA305116	EST - AA305116	
19263	5.1	H15054	Hs.22184	ESTs
24596	5.1	Z38910	Hs.27184	ESTs
28589	5.1	C21245	Hs.11171	H sapiens mRNA for apoptosis specific protein
5984	5.1	X17059	Hs.108838	Pregnancy-specific beta-1 glycoprotein 6
30710	5.1	N51781	Hs.47338	EST
26360	5.1	AA256460	Hs.44610	ESTs
2351	5.1	M15796	Hs.78996	Proliferating cell nuclear antigen
30262	5.1	N35265	Hs.44690	Homo sapiens clone 24739 mRNA sequence
41792	5.1	T03996	Hs.100265	ESTs
36710	5.1	AA434411	Hs.98806	ESTs
42185	5.1	T79951	Hs.111805	ESTs
18745	5.0	F09134	Hs.12839	ESTs
35746	5.0	AA406063	Hs.98003	ESTs
38900	5.0	AA436868	Hs.68578	H sapiens mRNA for M-phase phosphoprotein mpp9
27585	5.0	AA443328	Hs.12544	ESTs
27117	5.0	AA405059	Hs.38178	ESTs Weekly similar to MOESIN/ELKS/ADAXIN HOMOLOG [D. melanogaster]
33458	5.0	W68635	Hs.14158	Homo sapiens mRNA for KIAA0636 protein complete cds
26693	5.0	AA282120	Hs.88975	EST
12669	5.0	AA417030	Hs.5101	Homo sapiens protein regulating cytokinesis 1 (PRC1) mRNA complete cds
28701	5.0	H87970	Hs.42476	EST
34628	4.9	AA292436	Hs.27621	Homo sapiens tenascin F homolog mRNA complete cds
14895	4.9	U15128	Hs.56573	Human beta-12-N-acetylglucosaminyltransferase I (MGAT2) gene complete cds
34761	4.9	AA287833	Hs.89688	ESTs
23211	4.9	T42889	Hs.8329	ESTs
40611	4.9	N39138	Hs.106794	Homo sapiens mRNA for KIAA0594 protein partial cds
42911	4.9	W67006	Hs.79440	Homo sapiens putative RNA binding protein KOC (KOC) mRNA complete cds
17581	4.9	AA129395	Hs.71139	EST
18712	4.9	F04677	Hs.12381	ESTs
30709	4.9	N51752	Hs.47334	ESTs Weekly similar to synapse-associated protein sap47-1 [D. melanogaster]
34179	4.9	AA227903	Hs.41127	ESTs Highly similar to GTP-BINDING PROTEIN LEPA [Pseudomonas fluorescens]
1285	4.8	HG4157-HT4427	EST - HG4157-HT4427	

## FIGURE 4 (CONT.)

1106	HQ2981-1173.27	EST - HQ2981-1173.27	Hs 40323	Homo sapiens spleen mitotic checkpoint BUB3 (BUB3) mRNA complete cds
34807	AA331756	AA331756	Hs 98504	ESTs
48	AA291468	AA291468	Hs 32539	ESTs
11565	AA324819	AA324819	Hs 125014	ESTs
8285	AA050382	AA050382	Hs 71435	ESTs Weakly similar to SOF1 PROTEIN [Saccharomyces cerevisiae]
17522	AA131554	AA131554	Hs 81848	Human mRNA for KIAA0078 gene complete cds
34754	AA287842	AA287842	Hs 110455	ESTs Highly similar to 60S RIBOSOMAL PROTEIN L28 [Rattus norvegicus]
37567	AA460318	AA460318	Hs 141682	ESTs
38622	AA568967	AA568967	Hs 83758	CD228 protein kinase 2
25038	AA010065	AA010065	Hs 90283	Collagen type I alpha-2
32503	T17045	T17045	Hs 54489	SODIUM CHANNEL PROTEIN BRAIN II ALPHA SUBUNIT
3278	M94055	M94055	Hs 89550	Integral transmembrane protein 1
9696	L38961	L38961	Hs 98498	ESTs
36387	AA428270	AA428270	Hs 46397	ESTs
31381	N87889	N87889	Hs 95321	ESTs Highly similar to PRE-MRNA SPLICING FACTOR RNA HELICASE PRP28 [Saccharomyces cerevisiae]
26723	AA282781	AA282781	Hs 112019	ESTs Weakly similar to LINE-1 REVERSE TRANSCRIPTASE HOMOLOG [Nycticebus coucang]
30594	AA469847	AA469847	Hs 24164	ESTs Moderately similar to III ALU SUBFAMILY SQ WARNING ENTRY [H. sapiens]
38286	AA659427	AA659427	Hs 79187	Human cell surface protein HCAR mRNA complete cds
14474	U80716	U80716	Hs 97343	EST
5312	AA401750	AA401750	Hs 42710	EST
35598	H96628	H96628	EST - AA053096	
29739	7203	7203	Hs 89403	Homo sapiens protein-tyrosine kinase EPHE2V (EPHE2) mRNA complete cds
2157	L41939	L41939	Hs 52054	ESTs
32096	R11510	R11510	Hs 105464	ESTs Weakly similar to LITHOSTATINE 1 BETA PRECURSOR [H. sapiens]
8085	AA314779	AA314779	Hs 77695	Human mRNA for KIAA0008 gene complete cds
224	D13633	D13633	Hs 50582	ESTs
33656	W95477	W95477	Hs 111160	ESTs Weakly similar to III ALU SUBFAMILY J WARNING ENTRY [H. sapiens]
34065	AA195517	AA195517	Hs 90011	Adenylsuccinate synthase
6028	U23463	U23463	Hs 109102	Cytodrome B551
4186	N93869	N93869	Hs 91107	H. sapiens mRNA for hfat protein
41069	AA401334	AA401334	Hs 108641	ESTs
8284	AA443187	AA443187	Hs 41161	ESTs
27588	AA412047	AA412047	Hs 122578	ESTs
35982	AA262080	AA262080	Hs 110736	Human bumetanide-sensitive Na-K-Cl cotransporter (NKCC1) mRNA complete cds
34479	Y12265	Y12265	Hs 5092	Homo sapiens mRNA for nucleolar protein hnop56
15921	AA195399	AA195399	Hs 24641	ESTs
11278	AA821348	AA821348	Hs 110042	ESTs Highly similar to DOLICHYL-PHOSPHATE BETA-GLUCOSYLTRANSFERASE [Saccharomyces cerevisiae]
39222	AA491188	AA491188	Hs 62273	ESTs
8771	AA263032	AA263032	Hs 81634	ESTs
7888	H87736	H87736	Hs 34180	ESTs
19922	AA053319	AA053319	Hs 9951	ESTs
10716	AA442763	AA442763	Hs 20463	ESTs Highly similar to G2M1TIC-SPECIFIC CYCLIN B2 [Mesocricetus auratus]
15193	X17620	X17620	Hs 118538	NUCLEOSIDE DIPHOSPHATE KINASE A
5690	AA169226	AA169226	Hs 72782	ESTs
17683	N74438	N74438	Hs 50492	ESTs
28731	D20981	D20981	Hs 92453	EST
31690	AA609752	AA609752	Hs 71969	ESTs
28348	W48580	W48580	Hs 39872	ESTs Weakly similar to transposon LINE2 reverse transcriptase homolog [H. sapiens]
33038	AA485084	AA485084	Hs 110462	ESTs
29106	AA600121	AA600121	Hs 114467	ESTs
38690	N25855	N25855	Hs 6558	ESTs Moderately similar to III ALU SUBFAMILY SQ WARNING ENTRY [H. sapiens]
20203	R76185	R76185	Hs 18171	ESTs Weakly similar to C01H67 [C. elegans]
10251	N73690	N73690	Hs 57435	Natural resistance-associated macrophage protein 2
31638	K01884	K01884	EST - K01884	
1572				

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## FIGURE 4 (CONT.)

10923	AA116036	Hs.9329	ESTs	Hs.9329	ESTs	
34360	AA252414	Hs.104300	ESTs	Hs.104300	ESTs	
10132	R35733		EST - R35733			
16628	AA038811	Hs.61859	ESTs	Hs.61859	ESTs	
25146	AA028356	Hs.108106	ESTs	Hs.108106	ESTs	
28730	D20959	Hs.5858	ESTs	Hs.5858	ESTs	Moderately similar to III ALU SUBFAMILY SO WARNING ENTRY III [H sapiens]
10200	R64521	Hs.77361	ESTs	Hs.77361	ESTs	
36895	AA600176	Hs.112345	ESTs	Hs.112345	ESTs	
31385	N87550	Hs.48907	ESTs	Hs.48907	ESTs	
42378	W07568	Hs.105018	ESTs	Hs.105018	ESTs	
28650	AA479139	Hs.75393	Acid phosphatase 1 soluble	Hs.75393	Acid phosphatase 1 soluble	
2920	M29474	Hs.73958	Human recombination activating protein (RAG-1) gene complete cds	Hs.73958	Human recombination activating protein (RAG-1) gene complete cds	
8927	AF008442	Hs.5409	Homo sapiens RNA polymerase I subunit RPA39 mRNA complete cds	Hs.5409	Homo sapiens RNA polymerase I subunit RPA39 mRNA complete cds	
13379	AA449741	Hs.4029	ESTs Weakly similar to AF-9 PROTEIN [H sapiens]	Hs.4029	ESTs Weakly similar to AF-9 PROTEIN [H sapiens]	
5134	U79293	Hs.90802	Human done 23948 mRNA sequence	Hs.90802	Human done 23948 mRNA sequence	
36575	AA431085	Hs.98706	EST	Hs.98706	EST	
143	HUMTFRM11507		AFXA-HUMTFRM11507_5			
10970	AA128390	Hs.5285	ESTs	Hs.5285	ESTs	
25836	AA152305	Hs.2248	Interleukin (gamma)-induced cell line protein 10 from	Hs.2248	Interleukin (gamma)-induced cell line protein 10 from	
19735	R53038	Hs.36710	EST	Hs.36710	EST	
40711	N53564	Hs.108158	ESTs	Hs.108158	ESTs	
4149	U28386	Hs.2397	RAG (recombination activating gene) isoform 1	Hs.2397	RAG (recombination activating gene) isoform 1	
5767	X53793	Hs.118226	MULTIFUNCTIONAL PROTEIN ADE2	Hs.118226	MULTIFUNCTIONAL PROTEIN ADE2	
5503	X95532	Hs.85326	Stromelysin	Hs.85326	Stromelysin	
20310	N34993	Hs.8153	ESTs Highly similar to HYPOTHETICAL 47.8 KD PROTEIN B0280.9 IN CHROMOSOME II [Caenorhabditis elegans]	Hs.8153	ESTs Highly similar to HYPOTHETICAL 47.8 KD PROTEIN B0280.9 IN CHROMOSOME II [Caenorhabditis elegans]	
466	D38145	Hs.81333	Prostaglandin 12 (prostaglandin) synthase	Hs.81333	Prostaglandin 12 (prostaglandin) synthase	
33651	W85409	Hs.59704	ESTs	Hs.59704	ESTs	
19110	H08778	Hs.133521	ESTs	Hs.133521	ESTs	
24408	W60146	Hs.35962	ESTs	Hs.35962	ESTs	
26596	AA275943	Hs.68671	ESTs	Hs.68671	ESTs	
32969	W42451	Hs.92260	ESTs	Hs.92260	ESTs	
27005	AA398695	Hs.56159	ESTs Weakly similar to E04F6.2 gene product [C. elegans]	Hs.56159	ESTs Weakly similar to E04F6.2 gene product [C. elegans]	
29609	N21043	Hs.42932	EST	Hs.42932	EST	
9596	H91564	Hs.13540	ESTs	Hs.13540	ESTs	
23024	F09315	Hs.75962	Homo sapiens mRNA for KIA0583 protein partial cds	Hs.75962	Homo sapiens mRNA for KIA0583 protein partial cds	
21694	R39317	Hs.89403	Homo sapiens protein-tyrosine kinase EPHB2 (EPH82) mRNA complete cds	Hs.89403	Homo sapiens protein-tyrosine kinase EPHB2 (EPH82) mRNA complete cds	
37865	AA478623	Hs.99819	ESTs Highly similar to PUTATIVE UBIQUITIN CARBOXYL-TERMINAL HYDROLASE C13A11.04C [Schizosaccharomyces pombe]	Hs.99819	ESTs Highly similar to PUTATIVE UBIQUITIN CARBOXYL-TERMINAL HYDROLASE C13A11.04C [Schizosaccharomyces pombe]	
8961	HUMTFRM11507		AFXA-HUMTFRM11507_3			
24862	Z41415	Hs.6923	ESTs Highly similar to BONE MORPHOGENETIC PROTEIN 1 PRECURSOR [Mus musculus]	Hs.6923	ESTs Highly similar to BONE MORPHOGENETIC PROTEIN 1 PRECURSOR [Mus musculus]	
26685	AA281950	Hs.79656	ESTs	Hs.79656	ESTs	
42300	T95850	Hs.100703	ESTs	Hs.100703	ESTs	
6495	X92715	Hs.3057	Zinc finger protein 74 [C. elegans]	Hs.3057	Zinc finger protein 74 [C. elegans]	
38604	AA598603	Hs.111456	ESTs	Hs.111456	ESTs	
30560	N46284	Hs.1034	MYB PROTO-ONCOGENE PROTEIN	Hs.1034	MYB PROTO-ONCOGENE PROTEIN	
14413	AA600130	Hs.14366	ESTs	Hs.14366	ESTs	
38158	AA487021	Hs.105703	EST	Hs.105703	EST	
2572	M27281	Hs.73783	Vascular endothelial growth factor	Hs.73783	Vascular endothelial growth factor	
40100	H75933	Hs.75901	Laminin receptor (2-H6 epitope)	Hs.75901	Laminin receptor (2-H6 epitope)	
20944	N74443	Hs.19247	ESTs	Hs.19247	ESTs	
8513	AA466990	Hs.103135	ESTs	Hs.103135	ESTs	
13677	AA475604	Hs.7114	ESTs	Hs.7114	ESTs	
14509	AA605943	Hs.32793	ESTs	Hs.32793	ESTs	
10281	R03333	Hs.21182	ESTs	Hs.21182	ESTs	
25284	AA045074	Hs.110146	ESTs Weakly similar to S2-KO SS-A/Ro autoantigen [H sapiens]	Hs.110146	ESTs Weakly similar to S2-KO SS-A/Ro autoantigen [H sapiens]	
6730	Y09305	Hs.17154	H. sapiens mRNA for protein kinase Dyk4 partial	Hs.17154	H. sapiens mRNA for protein kinase Dyk4 partial	
10333	HUMISGF3AM97935		AFXA-HUMISGF3AM97935_MB			

## FIGURE 4 (CONT.)

39242	AA621523	Hs.110832	ESTs	Hs.110832	ESTs
27354	AA425221	Hs.81688	ESTs	Hs.81688	ESTs
4532	UA9185	Hs.76329	Human placenta (CHM3) mRNA complete cds	Hs.76329	Human placenta (CHM3) mRNA complete cds
18985	AA237219	Hs.110826	Homo sapiens CAGF9 mRNA partial cds	Hs.110826	Homo sapiens CAGF9 mRNA partial cds
16754	AA046067	EST - RC_AA046067		EST - RC_AA046067	
42463	W60180	Hs.103135	ESTs	Hs.103135	ESTs
867	D87716	Hs.90315	Human mRNA for KIAA0007 gene partial cds	Hs.90315	Human mRNA for KIAA0007 gene partial cds
31795	N80703	Hs.50473	ESTs	Hs.50473	ESTs
22828	P88192	Hs.35628	ESTs	Hs.35628	ESTs
25240	AA039713	Hs.110406	ESTs	Hs.110406	ESTs
4341	U39545	Hs.82597	Human ARF-activated phosphatidylinositol-specific phospholipase D1a (pPLD1) mRNA complete cds	Hs.82597	Human ARF-activated phosphatidylinositol-specific phospholipase D1a (pPLD1) mRNA complete cds
17483	AA112147	Hs.84891	ESTs	Hs.84891	ESTs
16854	AA055552	Hs.71622	ESTs Weakly similar to KIAA0319 [H.sapiens]	Hs.71622	ESTs Weakly similar to KIAA0319 [H.sapiens]
3709	U07550	Hs.1187	Heat shock 10 KD protein 1 (chaperonin 10)	Hs.1187	Heat shock 10 KD protein 1 (chaperonin 10)
1808	L02005	Hs.11758	KERATIN TYPE II CYTOSKELETAL 6D	Hs.11758	KERATIN TYPE II CYTOSKELETAL 6D
4951	U89546	Hs.82321	Human RNA binding protein ETV-3 mRNA complete cds	Hs.82321	Human RNA binding protein ETV-3 mRNA complete cds
20418	N49209	Hs.32170	ESTs	Hs.32170	ESTs
27595	AA470155	Hs.75887	Homo sapiens coatomer protein (COPA) mRNA complete cds	Hs.75887	Homo sapiens coatomer protein (COPA) mRNA complete cds
27606	AA287423	Hs.126389	ESTs	Hs.126389	ESTs
24677	AA443783	Hs.94761	ESTs	Hs.94761	ESTs
8328	Z39335	Hs.21201	ESTs Highly similar to POLIOVIRUS RECEPTOR HOMOLOG PRECURSOR [Mus musculus]	Hs.21201	ESTs Highly similar to POLIOVIRUS RECEPTOR HOMOLOG PRECURSOR [Mus musculus]
17878	AA134275	Hs.33685	Homo sapiens importin-alpha homolog (SEP/gamma) mRNA complete cds	Hs.33685	Homo sapiens importin-alpha homolog (SEP/gamma) mRNA complete cds
38279	AA421258	Hs.134510	Human HIV-1 tat element modulatory factor mRNA sequence from chromosome 3	Hs.134510	Human HIV-1 tat element modulatory factor mRNA sequence from chromosome 3
20064	H96653	Hs.13889	ESTs Weakly similar to US-1 protein [H.sapiens]	Hs.13889	ESTs Weakly similar to US-1 protein [H.sapiens]
9713	L44338	Hs.16056	ESTs	Hs.16056	ESTs
29822	D11837	Hs.76494	Homo sapiens mRNA for KIAA0525 protein partial cds	Hs.76494	Homo sapiens mRNA for KIAA0525 protein partial cds
28828	D11898	Hs.29848	ESTs	Hs.29848	ESTs
25804	AA146885	Hs.82386	ESTs Moderately similar to PROHIBITIN [H.sapiens]	Hs.82386	ESTs Moderately similar to PROHIBITIN [H.sapiens]
2462	M22998	Hs.111770	ESTs	Hs.111770	ESTs
14904	T83389	Hs.1846	Tumor protein p53 (L-Fraumeni syndrome)	Hs.1846	Tumor protein p53 (L-Fraumeni syndrome)
25265	AA043765	Hs.107147	ESTs Highly similar to GEPHYRIN [Rattus norvegicus]	Hs.107147	ESTs Highly similar to GEPHYRIN [Rattus norvegicus]
13906	AA456437	Hs.54649	H.sapiens RV-1 mRNA for putative nucleic acid binding protein	Hs.54649	H.sapiens RV-1 mRNA for putative nucleic acid binding protein
42007	T96595	Hs.20386	ESTs Weakly similar to CLEAVAGE STIMULATION FACTOR 64 KD SUBUNIT [H.sapiens]	Hs.20386	ESTs Weakly similar to CLEAVAGE STIMULATION FACTOR 64 KD SUBUNIT [H.sapiens]
42007	AA456437	EST - RC_T96595		EST - RC_T96595	
1544	J05068	Hs.2012	TRANSCOBALAMIN I PRECURSOR	Hs.2012	TRANSCOBALAMIN I PRECURSOR
42311	T97257	Hs.84560	ESTs	Hs.84560	ESTs
2023	L34600	Hs.3923	INITIATION FACTOR IF-2 MITOCHONDRIAL PRECURSOR	Hs.3923	INITIATION FACTOR IF-2 MITOCHONDRIAL PRECURSOR
4540	U48807	Hs.2359	Human MAP kinase phosphatase (MKP-2) mRNA complete cds	Hs.2359	Human MAP kinase phosphatase (MKP-2) mRNA complete cds
33707	Z38287	Hs.3281	Neutrophil peroxidase II	Hs.3281	Neutrophil peroxidase II
17220	AA083070	EST - RC_AA083070_s		EST - RC_AA083070_s	
24332	W85782	Hs.18529	ESTs	Hs.18529	ESTs
36887	AA412067	Hs.98117	ESTs	Hs.98117	ESTs
8338	AA417152	Hs.5101	Homo sapiens protein regulating cytokinesis 1 (PRC1) mRNA complete cds	Hs.5101	Homo sapiens protein regulating cytokinesis 1 (PRC1) mRNA complete cds
387	D28589	EST - D28589		EST - D28589	
12319	AA398109	Hs.20890	ESTs	Hs.20890	ESTs
15643	W85247	Hs.27437	ESTs Highly similar to KINESIN-LIKE PROTEIN KIF4 [Mus musculus]	Hs.27437	ESTs Highly similar to KINESIN-LIKE PROTEIN KIF4 [Mus musculus]
11218	AA180488	Hs.33746	ESTs	Hs.33746	ESTs
18539	AA029328	Hs.1191	Human mRNA for KIAA0073 gene partial cds	Hs.1191	Human mRNA for KIAA0073 gene partial cds
28203	H28581	Hs.82711	ESTs	Hs.82711	ESTs
13839	AA655342	Hs.34046	ESTs	Hs.34046	ESTs
25585	AA112389	Hs.107932	H4(D10S170)	Hs.107932	H4(D10S170)
34018	AA191488	Hs.73614	Human high-affinity copper uptake protein (HCTR1) mRNA complete cds	Hs.73614	Human high-affinity copper uptake protein (HCTR1) mRNA complete cds
251	D14520	Hs.84728	Basic transcription element binding protein 2	Hs.84728	Basic transcription element binding protein 2
3778	U19848	Hs.383	Zinc finger protein 139 (clone pTZ-37)	Hs.383	Zinc finger protein 139 (clone pTZ-37)
24535	Z38409	Hs.8055	ESTs	Hs.8055	ESTs
16127	AA04869	Hs.39441	ESTs	Hs.39441	ESTs

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## FIGURE 4 (CONT.)

26149	3.4	AA250824	Hs.60478	ESTs Weakly similar to ZINC FINGER PROTEIN 91 [H.sapiens]
4011	3.4	U20535	Hs.3280	Human cysteine protease Mcr2 isoform alpha (Mcr2) mRNA complete cds
5660	3.4	X16396	Hs.37791	NAD-DEPENDENT METHYLENE-TRAHYDROFOLATE DEHYDROGENASE
28928	3.4	AA342590	Hs.47232	ESTs
36287	3.4	AA424046	Hs.96365	ESTs
32257	3.4	RS4725	Hs.89493	DNA-REPAIR PROTEIN XRCC1
17385	3.4	AA101551	Hs.69600	ESTs
15296	3.3	W16684	Hs.74284	ESTs Moderately similar to Similar to S cerevisiae hypothetical protein L3111 [H.sapiens]
17675	3.3	AA134064	Hs.44045	ESTs
10006	3.3	N81193	Hs.43133	Homo sapiens mRNA for KIAA0623 protein complete cds
33985	3.3	AA181560	Hs.81690	Homo sapiens importin beta subunit mRNA complete cds
9670	3.3	H85189	Hs.24837	Homo sapiens sodium/myo-inositol cotransporter (SLC5A3) gene complete cds
37551	3.3	AA458679	Hs.7298	ESTs
18367	3.3	AA224180	Hs.83322	ESTs Moderately similar to ovarian-specific protein [R.norvegicus]
14310	3.3	AA598412	Hs.8739	ESTs Highly similar to HYPOTHETICAL TRP-ASP REPEATS CONTAINING PROTEIN IN PMTs-PCT1 INTERGENIC REGION [Saccharomyces cerevisiae]
19233	3.3	H12534	Hs.8104	ESTs
12809	3.3	AA424406	Hs.31838	ESTs
21555	3.3	R33073	Hs.24595	EST
13767	3.3	AA463234	Hs.119287	ESTs
4739	3.3	U58766	Hs.75801	Human FX protein mRNA complete cds
7258	3.3	AA075427	Hs.17296	ESTs
17041	3.3	AA070364	EST - RC_AA070364	
15504	3.3	VZB362	Hs.44131	ESTs
18214	3.3	AA196635	Hs.89081	ESTs
7401	3.3	AA094800	Hs.55682	Human translation initiation factor eIF3 p68 subunit mRNA complete cds
18912	3.3	F10913	Hs.12475	Homo sapiens clone 22817 unknown mRNA partial cds
36317	3.3	AA425089	Hs.50722	Human mRNA for KIAA0334 gene complete cds
9410	3.3	H20443	Hs.31748	H.sapiens mRNA for TRES
2146	3.2	L41390	EST - L41390	
16683	3.2	FQ458	Hs.38464	ESTs Highly similar to INORGANIC PYROPHOSPHATASE [Rosa laurus]
35891	3.2	HUMTRFRM11507	AFX-HUMTRFRM11507_M	
13940	3.2	X70944	Hs.91379	PTB-ASSOCIATED SPLICING FACTOR
3256	3.2	M92439	Hs.87167	130 KD LEUCINE-RICH PROTEIN
4400	3.2	U41387	Hs.5122	Human Gc protein mRNA partial cds
21350	3.2	R15846	Hs.21738	ESTs
11981	3.2	AA260928	Hs.24287	ESTs
23930	3.2	T66990	Hs.125123	ESTs Weakly similar to "III" ALU SUBFAMILY J WARNING ENTRY [III] [H.sapiens]
30389	3.2	N45226	Hs.48485	EST
13494	3.2	AA483431	Hs.21043	ESTs
12908	3.2	AA427579	Hs.8347	ESTs
31309	3.1	N68818	Hs.42179	ESTs
31192	3.1	N64406	Hs.54174	ESTs
11268	3.1	AA195512	Hs.25918	ESTs
170	3.1	D03596	Hs.82962	Thymidylate synthase
26105	3.1	AA243133	Hs.48916	Homo sapiens serine/threonine kinase (STAK) mRNA complete cds
11659	3.1	AA251909	Hs.38708	Homo sapiens MAO3-like protein kinase mRNA complete cds
19177	3.1	H10984	Hs.12338	ESTs
17380	3.1	AA102566	Hs.103046	ESTs
42397	3.1	W42928	Hs.63220	ESTs Weakly similar to GA BINDING PROTEIN BETA-2 CHAIN [H.sapiens]
14935	3.1	T94928	Hs.131361	PYRUVATE DEHYDROGENASE E1 COMPONENT' ALPHA SUBUNIT TESTIS-SPECIFIC FORM PRECURSOR
3190	3.1	M68808	Hs.48269	Homo sapiens mRNA for VRK1 complete cds
17406	3.1	AA112979	Hs.15140	ESTs
14100	3.1	AA489041	Hs.5386	ESTs Highly similar to phosphorylation regulatory protein HP-10 [H.sapiens]
14134	3.1	AA489060	Hs.106833	ESTs Weakly similar to T3G11.7 [C.elegans]
42421	3.1	W45451	Hs.5337	ESTs Highly similar to ribosome-binding protein p34 [R.norvegicus]
15723	3.1	W47060		



## FIGURE 4 (CONT.)

11140	3.1	AA15832	Hs.1817 ESTs highly similar to YSA1 PROTEIN [Schistosoma mansoni]
1422	3.1	AA510108	Hs.2763 ESTs highly similar to PROBABLE PEPTIDYL-PROLYL CIS-TRANS ISOMERASE CD1E1.05C [Schistosoma mansoni]
1592	3.1	Z21420	Hs.30819 ESTs
13229	3.0	AA43811	Hs.23363 ESTs
27315	3.0	AA424036	Hs.58197 ESTs
35929	3.0	AA424036	Hs.58197 ESTs
17925	3.0	AA414229	Hs.48642 ESTs
5053	3.0	AA164209	Hs.31730 Homo sapiens RRM RNA binding protein GRY-RBP mRNA complete cds
15060	3.0	U76992	Hs.71134 Human Tat-SF1 mRNA complete cds
41663	3.0	U54988	Hs.93121 Human LGN protein mRNA complete cds
17757	3.0	AA147224	Hs.71814 EST
26530	3.0	AA278650	Hs.72391 ESTs
22960	3.0	T10272	Hs.4287 ESTs
4298	3.0	U36448	Hs.74574 Human Cal2+ dependent activator protein for secretion mRNA complete cds
7448	3.0	AA104023	Hs.110048 ESTs
18055	3.0	AA179387	Hs.73598 ESTs
7282	3.0	AA083339	Hs.128781 ESTs
806	3.0	D87008	Hs.43834 Human (lambda) DNA for immunoglobulin light chain
38447	3.0	AA562255	Hs.54404 Human protein kinase ATR mRNA complete cds
41464	3.0	R46837	Hs.107450 ESTs
9652	3.0	L19161	Hs.121541 TRANSLATIONAL INITIATION FACTOR 2 GAMMA SUBUNIT
15174	3.0	U82987	Hs.87248 Human Bcl-2 binding component 1 (bcl2) mRNA partial cds
33620	3.0	X63943	Hs.58509 ESTs
41077	3.0	N85028	Hs.126031 ESTs
1932	3.0	L24604	Hs.76639 Human (p23) mRNA complete cds
39556	3.0	F03738	Hs.3637 ESTs
32156	3.0	R40381	Hs.142852 ESTs
13617	3.0	AA456646	Hs.28981 ESTs
11889	3.0	AA381251	Hs.55986 ESTs Weakly similar to titinax protein txi [D.melanogaster]
6056	2.9	X68194	Hs.83919 Penicillin (human keratinocyte line HaCAT) mRNA 2106 nt
1605	2.9	L00058	Hs.79070 V-myc avian myeloblastosis viral oncogene homolog
4536	2.9	U48705	Hs.75562 Receptor protein-tyrosine kinase EDCR1
10173	2.9	R96878	Hs.102983 ESTs Weakly similar to cell division control protein CDC2 [H.sapiens]
21009	2.9	R90401	Hs.28528 ESTs
36200	2.9	AA421164	Hs.107213 ESTs
33289	2.9	AA389622	Hs.75133 Transcription factor 6-like 1 (mitochondrial transcription factor 1-like)
9804	2.9	U74558	Hs.142965 Human SIL mRNA complete cds
12313	2.9	AA397916	Hs.22595 ESTs
5928	2.9	X62048	Hs.75186 WEE1-LIKE PROTEIN KINASE
18196	2.9	AA195318	Hs.83311 ESTs
19657	2.9	H61476	Hs.15941 ESTs
6081	2.9	X69388	Hs.82855 CD47 antigen (Rn-related antigen integrin-associated signal transducer)
5254	2.9	U86792	Hs.76887 Human 26S proteasome-associated pad1 homolog (POH1) mRNA complete cds
13579	2.9	AA455967	Hs.106705 Human neuronal PAS2 (NPAS2) mRNA complete cds
38495	2.9	AA505118	Hs.112255 Human nucleoprotein 98 (NUP98) mRNA complete cds
2028	2.9	L35035	Hs.79886 RIBOSE 5-PHOSPHATE ISOMERASE
27374	2.9	AA425915	Hs.94841 ESTs Weakly similar to Y5SC12A.3 [C.elegans]
41889	2.9	AA243163	Hs.53652 ESTs
16708	2.9	U39590	Hs.57700 UDP glycosyltransferase 8 (UDP-galactose 4-epimerase/galactosyltransferase)
357	2.8	AA043944	Hs.92593 ESTs
25045	2.8	AA236276	Hs.76022 Human mRNA for transcriptional activator NSNF2b complete cds
8059	2.8	AA310967	Hs.87287 ESTs
21358	2.8	R18078	Hs.14775 ESTs
3572	2.8	S87759	Hs.57784 Protein phosphatase 2C alpha (human teratocarcinoma mRNA 2346 nt)
11877	2.8	AA262727	Hs.9581 ESTs
36830	2.8	AA411445	Hs.138386 ESTs

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## FIGURE 4 (CONT.)

20151	2.8	N22855	Hs 6831	Human sapiens clone 1400 unknown protein mRNA partial cds
38548	2.8	AA59287	Hs 118236	ESTs
7777	2.8	AA238820	Hs 55459	EST
32845	2.8	VG1566	Hs 62273	ESTs
28259	2.8	AA505133	Hs 99150	ESTs
35944	2.8	AA412486	Hs 99150	ESTs
30648	2.8	N50971	Hs 42116	ESTs
8516	2.8	AA460077	Hs 28555	ESTs
34929	2.8	AA342084	EST - RC_AA342084	
326	2.8	D21262	Hs 75337	Human mRNA for KIAA0035 gene partial cds
6480	2.8	X91788	Hs 84974	H.sapiens mRNA for Icn protein
23202	2.8	AA034527	Hs 85182	EST
1091	2.8	L07493	Hs 1608	Replication protein A (E.coli RecA homolog RAD51 homolog)
14566	2.8	AA621122	Hs 5198	ESTs
14182	2.8	AA480895	Hs 21768	ESTs
18253	2.7	AA206370	Hs 86248	ESTs
22911	2.7	T03885	Hs 27047	ESTs
35549	2.7	AA401274	Hs 31730	Human sapiens RRM RNA binding protein Gyrfp (GRY-RBP) mRNA complete cds
35955	2.7	AA412528	Hs 20183	ESTs Weakly similar to ORF2 consensus sequence encoding endonuclease and reverse transcriptase minus RNaseH [R.norvegicus]
17842	2.7	AA132983	Hs 44155	ESTs Moderately similar to C-1-TETRAHYDROFOLATE SYNTHASE CYTOPLASMIC [H.sapiens]
5131	2.7	X72841	Hs 27188	Human retinoblastoma-binding protein (RbAp48) mRNA complete cds
41429	2.7	R44984	Hs 108182	ESTs
22937	2.7	T10065	Hs 4214	Human sapiens TLS-associated protein TAPR-2 mRNA complete cds
16243	2.7	AA012802	Hs 60358	ESTs
8444	2.7	X89750	Hs 80077	H.sapiens mRNA for TGIF protein
6240	2.7	X78627	Hs 75066	H.sapiens mRNA for tranlin
42119	2.7	T69624	EST - RC_T69624	
7701	2.7	AA215333	Hs 97101	ESTs
17688	2.7	AA128905	Hs 22687	ESTs
42534	2.7	W73785	Hs 86403	Human sapiens protein-tyrosine kinase EPHB2 (EPH-B2) mRNA complete cds
28813	2.7	AA398507	Hs 97381	ESTs
32573	2.7	T27697	Hs 21803	Human mRNA for KIAA0036 gene complete cds
32583	2.7	AA443720	Hs 7551	ESTs
13223	2.7	AA443460	Hs 3430	ESTs
8494	2.7	HG3132-HT3308	EST - HG3132-HT3308	
1130	2.7	M16937	Hs 619	Human homeobox c1 protein mRNA complete cds
2378	2.7	F10888	Hs 48571	Human SH3 domain-containing protein SH3P18 mRNA complete cds
18926	2.7	AA291259	Hs 97101	ESTs
34796	2.7	Z38501	Hs 8768	ESTs Weakly similar to PROBABLE E5 PROTEIN [Human papillomavirus type 58]
33088	2.7	N52078	Hs 13804	Human sapiens mRNA for KIAA0637 protein complete cds
21256	2.7	R09195	Hs 86013	Human sapiens mRNA for KIAA0584 protein partial cds
9236	2.7	D82775	Hs 10724	ESTs Weakly similar to unknown [S.cerevisiae]
3154	2.7	M3712	Hs 1614	Cholinergic receptor nicotinic alpha polypeptide 6
7393	2.7	AA393354	Hs 10922	ESTs Weakly similar to HYPOTHETICAL 18.3 KD PROTEIN IN SMY2-RPS101 INTERGENIC REGION [S.cerevisiae]
1823	2.7	L33808	Hs 1695	Matrix metalloproteinase 12 (macrophage elastase)
30407	2.8	AA333351	Hs 46872	ESTs
26286	2.8	H81497	Hs 44435	ESTs
9558	2.8	AA188901	Hs 12063	ESTs
18104	2.8	AB002359	Hs 105478	Human mRNA for KIAA0361 gene KIAA0361 protein
8885	2.8	N49300	Hs 24908	ESTs
20422	2.8	R67258	Hs 59215	ESTs Moderately similar to moletkin [M.musculus]
41602	2.8	U82801	Hs 79391	Human protease M mRNA complete cds
4821	2.8	AA053296	Hs 63136	ESTs
18807	2.8	W07562	Hs 26138	ESTs Moderately similar to A6 [R.norvegicus]
15288	2.8			

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## FIGURE 4 (CONT.)

23822	191715	Hs 14574	ESTs Highly similar to HYPOTHETICAL 103.9 KD PROTEIN IN COX8B-PP2B INTERGENIC REGION [Saccharomyces cerevisiae]
10651	AA126719	Hs 25282	ESTs
26891	AA352659	Hs 83367	ESTs
7689	AA215298	Hs 70830	Homo sapiens chromosome 19 cosmid R30783
11308	AA207114	Hs 27842	ESTs
4056	U24704	Hs 111709	Human antisecretory factor-1 mRNA complete cds
38615	AA599398		EST - RC_A458939
11819	AA258189	Hs 32471	ESTs
37433	AA454103	Hs 110031	ESTs
5587	X13482	Hs 80508	U2 SMALL NUCLEAR RIBONUCLEOPROTEIN A'
19841	H59617	Hs 5199	ESTs Highly similar to UBIQUITIN-CONJUGATING ENZYME E2-17 KD [Crocophila melanogaster]
10655	AA040882	Hs 10290	ESTs
31574	N71303	Hs 50015	EST
7614	AA187579	Hs 10296	ESTs Weakly similar to Yel007c-ap [S. cerevisiae]
7090	AA005913	Hs 10300	Homo sapiens diphthamide biosynthesis protein-2 (DPH2) mRNA complete cds
24219	Y69960	Hs 19418	ESTs
19070	H59970	Hs 133823	Human clone 23950 mRNA sequence
17719	AA138589	Hs 14295	EST
11362	AA227281	Hs 29922	ESTs
8613	AA459555	Hs 31921	Homo sapiens mRNA for KIAA0949 protein partial cds
13666	AA478319	Hs 5327	ESTs
39252	F03605	Hs 75374	PUTATIVE 80S RIBOSOMAL PROTEIN
1795	L13434	Hs 84182	Human chromosome 3p21.1 gene sequence complete cds
14746	D67054	Hs 90316	Human mRNA for KIAA0907 gene partial cds
2983	M44929	Hs 75200	Protein phosphatase 2 (formally 2A) regulatory subunit B (PR-2) alpha isoform
12986	AA430032	Hs 7487	ESTs Moderately similar to PTTG gene product [R. norvegicus]
18003	AA171692	Hs 70680	ESTs
42653	V62703	Hs 103239	ESTs
30438	N47204	Hs 48680	ESTs Weakly similar to C50F4.12 [C. elegans]
26135	AA243765	Hs 78977	ESTs
15467	W27560	Hs 90789	ESTs
27748	AA453159	Hs 41723	Human kinesin-like spindle protein HKSP (HKSP) mRNA complete cds
32315	R69840	Hs 70199	ESTs Weakly similar to LINE-1 REVERSE TRANSCRIPTASE HONOLULU [Nycticebus coucang]
25310	AA048745	Hs 110457	ESTs
6859	L16991	Hs 79008	Deoxythymidylate kinase
12210	AA293774	Hs 71281	ESTs Weakly similar to PROBABLE TRYPTOPHAN-L-TRNA SYNTHETASE MITOCHONDRIAL [C. elegans]
32826	V20391	Hs 20830	Human mRNA for kinase-related protein partial cds
9692	L37747	Hs 89487	LAMIN B1
27862	AA468908	Hs 50883	ESTs
17288	AA085178	Hs 24382	ESTs
9588	N32449	Hs 111449	ESTs Highly similar to HYPOTHETICAL 30.3 KD PROTEIN IN APE1/LAP4-CWP1 INTERGENIC REGION [Saccharomyces cerevisiae]
5932	X62153	Hs 82479	Minichromosome maintenance deficient (S. cerevisiae) 3
26934	AA297139	Hs 59348	ESTs Weakly similar to ASPARTYL-TRNA SYNTHETASE [Thermus aquaticus thermophilus]
5157	U80334	Hs 68583	Human mitochondrial intermediate peptidase precursor (MPEP) mRNA mitochondrial gene encoding mitochondrial protein complete cds
38434	AA487013	Hs 142962	ESTs
7590	AA173505	Hs 33353	ESTs Weakly similar to HYPOTHETICAL 46.1 KD PROTEIN IN PHO2-POL3 INTERGENIC REGION [S. cerevisiae]
14960	U05337	Hs 99872	Human fetal A2-50-reactive clone 1 (FAC1) mRNA complete cds
13585	AA455999	Hs 22151	ESTs Highly similar to NEUROLYSIN PRECURSOR [Sus scrofa]
39185	AA487508	Hs 8877	Homo sapiens mRNA for KIAA0689 protein complete cds
34678	AA284744	Hs 75510	Annealin XI (59KD autocatalytic)
1424	J02645	Hs 81613	Eukaryotic translation initiation factor 2A
21876	R43285		EST - RC_R43285
34280	AA238868	Hs 111314	ESTs
16709	AA189591	Hs 58169	Homo sapiens reticuloblastoma-associated protein HEC mRNA complete cds
6485	X92098	Hs 75814	H. sapiens mRNA for transmembrane protein mp24
27444	AA430180	Hs 42785	ESTs Weakly similar to F25HB.7 [C. elegans]

## FIGURE 4 (CONT.)

30037	N27439	Hs.51652	ESTs	Hs.51652	ESTs	Weakly similar to W02B12.7 [C.elegans]
27652	A4443702	Hs.29835	ESTs	Hs.29835	ESTs	Weakly similar to W02B12.7 [C.elegans]
3390	S59184	Hs.79350	RYK, receptor-like tyrosine kinase	Hs.79350	RYK, receptor-like tyrosine kinase	
25040	A4010166	Hs.10303	ESTs	Hs.10303	ESTs	
40477	N24006	Hs.99448	Homo sapiens BAC clone RG300E22 from 7a21-q31.1	Hs.99448	Homo sapiens BAC clone RG300E22 from 7a21-q31.1	
19620	F02506	Hs.8417	ESTs	Hs.8417	ESTs	
15120	U73524	Hs.87465	Human putative ATP/GTP-binding protein (HEAB) mRNA complete cds	Hs.87465	Human putative ATP/GTP-binding protein (HEAB) mRNA complete cds	
28813	D59257	Hs.91161	Human C-1 mRNA complete cds	Hs.91161	Human C-1 mRNA complete cds	
34723	A4287115	Hs.99687	ESTs	Hs.99687	ESTs	
7960	AA28277	Hs.8932	Homo sapiens brain expressed ring finger protein mRNA complete cds	Hs.8932	Homo sapiens brain expressed ring finger protein mRNA complete cds	
18927	F11087	Hs.12544	ESTs	Hs.12544	ESTs	
28443	AA821611	Hs.70877	ESTs	Hs.70877	ESTs	
452	D36276	Hs.24763	RAIN binding protein 1	Hs.24763	RAIN binding protein 1	
11701	AA350331	Hs.31730	Homo sapiens RRM RNA binding protein Gyr-fbp (GRY-FBP) mRNA complete cds	Hs.31730	Homo sapiens RRM RNA binding protein Gyr-fbp (GRY-FBP) mRNA complete cds	
12672	AA417067	Hs.13055	ESTs	Hs.13055	ESTs	
4838	L63717	Hs.95821	Human osteoblast stimulating factor mRNA complete cds	Hs.95821	Human osteoblast stimulating factor mRNA complete cds	
42200	T83729	EST - RC_783729		EST - RC_783729		
28395	AA810054	Hs.73602	ESTs	Hs.73602	ESTs	
36390	AA425291	Hs.108527	ESTs	Hs.108527	ESTs	Weakly similar to No definition line found [C.elegans]
12016	AA427145	Hs.37747	ESTs	Hs.37747	ESTs	
36786	AA435815	Hs.77685	Human Ck-associated RS cyclophilin CARS-Cyp mRNA complete cds	Hs.77685	Human Ck-associated RS cyclophilin CARS-Cyp mRNA complete cds	
39462	D60085	Hs.8912	ESTs	Hs.8912	ESTs	
14420	AA500322	Hs.18574	ESTs	Hs.18574	ESTs	Highly similar to AAG-RICH mRNA CLONE AAC3 PROTEIN [Diplostelium discoideum]
27431	AA429009	Hs.40541	ESTs	Hs.40541	ESTs	
6387	X85372	Hs.105465	H.sapiens mRNA for Sm protein F	Hs.105465	H.sapiens mRNA for Sm protein F	
11342	AA323874	Hs.14843	Homo sapiens mRNA for KIA0704 protein partial cds	Hs.14843	Homo sapiens mRNA for KIA0704 protein partial cds	
1487	J04088	Hs.3378	Topoisomerase (DNA) II alpha (170kD)	Hs.3378	Topoisomerase (DNA) II alpha (170kD)	
11454	AA233854	Hs.23348	ESTs	Hs.23348	ESTs	
32378	W42788	Hs.1088	Human terminal transferase mRNA complete cds	Hs.1088	Human terminal transferase mRNA complete cds	
27872	AA469254	Hs.48855	ESTs	Hs.48855	ESTs	
11923	AA420617	Hs.31082	ESTs	Hs.31082	ESTs	
22142	R51382	Hs.124275	Homo sapiens mRNA for KIA0659 protein partial cds	Hs.124275	Homo sapiens mRNA for KIA0659 protein partial cds	
13333	AA464607	Hs.38114	ESTs	Hs.38114	ESTs	Highly similar to HYPOTHETICAL 40.2 KD PROTEIN K12H4.3 IN CHROMOSOME III [Caenorhabditis elegans]
6231	X78121	Hs.2010	Chondroectin	Hs.2010	Chondroectin	
24371	W87415	Hs.18918	ESTs	Hs.18918	ESTs	Weakly similar to III ALU SUBFAMILY J WARNING ENTRY [III] [H.sapiens]
25286	AA046281	Hs.108259	ESTs	Hs.108259	ESTs	
8163	AA357394	Hs.98073	ESTs	Hs.98073	ESTs	
12233	AA343513	Hs.28813	ESTs	Hs.28813	ESTs	Weakly similar to LINE7g H-chain fusion protein [Musculus]
14371	AA590219	Hs.30272	ESTs	Hs.30272	ESTs	Moderately similar to ALR [H.sapiens]
28169	AA351089	Hs.94576	ESTs	Hs.94576	ESTs	Weakly similar to ORF YOR281c [S.cerevisiae]
23085	T23539	Hs.7165	ESTs	Hs.7165	ESTs	Highly similar to zinc finger protein [Musculus]
20524	N53965	Hs.15741	ESTs	Hs.15741	ESTs	
20837	N62263	Hs.20524	ESTs	Hs.20524	ESTs	Highly similar to HEXOKINASE TYPE I [Homo sapiens]
13377	R07210	Hs.19813	ESTs	Hs.19813	ESTs	
17352	AA449720	Hs.20201	Homo sapiens clone 24726 mRNA sequence	Hs.20201	Homo sapiens clone 24726 mRNA sequence	
11914	AA100625	Hs.20960	ESTs	Hs.20960	ESTs	
28796	AA278907	Hs.24649	ESTs	Hs.24649	ESTs	
22461	D51272	EST - RC_D51272_9		EST - RC_D51272_9		
40847	R77012	Hs.29055	EST	Hs.29055	EST	
42022	N65354	Hs.109437	ESTs	Hs.109437	ESTs	
8053	T53138	Hs.19592	Homo sapiens mRNA for hTGF-4	Hs.19592	Homo sapiens mRNA for hTGF-4	
363	AA309880	Hs.109857	ESTs	Hs.109857	ESTs	
29679	D26528	Hs.120595	Human mRNA for RNA helicase complete cds	Hs.120595	Human mRNA for RNA helicase complete cds	
31858	AA261733	Hs.4310	ESTs	Hs.4310	ESTs	
24092	N90690	Hs.54642	EST	Hs.54642	EST	
	W42845	Hs.14811	Homo sapiens protein tyrosine phosphatase P1R1 mRNA complete cds	Hs.14811	Homo sapiens protein tyrosine phosphatase P1R1 mRNA complete cds	

## FIGURE 4 (CONT.)

15428	23	H22949	Hs.31942 EST	
27864	23	AA418389	Hs.40219 ESTs	
13600	23	AA456286	Hs.30794 ESTs	
13552	23	AA454943	Hs.29911 ESTs	
28583	23	AA279774	Hs.142497 ESTs	
3074	23	U05237	Hs.99872 Human fetal A12-50-reactive clone 1 (FAC1) mRNA complete cds	
33654	23	Z38770	Hs.71623 ESTs	
16977	23	AA064616	Hs.66983 ESTs	
5948	23	X63337	EST - X63337	
24247	23	W73010	Hs.106761 Ribosomal protein L37	
40879	23	N97818	Hs.53263 ESTs Moderately similar to III ALU SUBFAMILY SX WARNING ENTRY III [H.sapiens]	
5875	23	X59405	Hs.83532 Membrane cofactor protein (CD46) (prophylactin) (prophylactin cross-reactive antigen)	
9239	23	D79100	Hs.83196 ESTs	
41967	23	T47788	Hs.106628 ESTs	
39565	23	F04320	Hs.35120 Replication factor C 37-kD subunit	
7404	23	AA094989	Hs.73811 Homo sapiens voltage dependent anion channel protein mRNA complete cds	
6388	23	X83373	Hs.77486 H.sapiens mRNA for Sm protein G	
14529	23	AA820307	Hs.27379 ESTs	
21157	23	R07320	Hs.19636 ESTs	
28203	23	AA490969	Hs.59838 ESTs	
38320	23	AA490911	Hs.99838 ESTs	
4874	23	U54989	Hs.93121 Human LGN protein mRNA complete cds	
26756	23	AA033432	Hs.88619 ESTs	
11587	23	AA036747	Hs.30327 Homo sapiens mitogen activated protein kinase activated protein kinase gene complete cds	
25050	23	AA011134	Hs.25863 ESTs Weakly similar to renin [H.sapiens]	
41935	23	T29681	Hs.75761 Human sarin kinase mRNA complete cds	
28695	23	AA392765	Hs.42550 H.sapiens mRNA for M-phase phosphoprotein mp65	
3343	23	M97938	Hs.21486 SIGNAL TRANSDUCER AND ACTIVATOR OF TRANSCRIPTION 1-ALPHA/BETA	
42435	23	V46594	Hs.106903 ESTs	
5937	22	X62534	Hs.80984 High-mobility group (nonhistone chromosomal) protein 2	
25756	22	AA135868	Hs.95763 ESTs	
34184	22	AA227959	Hs.3290 Human cysteine protease Mca2 isoform alpha (Mca2) mRNA complete cds	
8872	22	AA477046	Hs.69838 ESTs	
7387	22	AA093977	Hs.71475 ESTs	
18016	22	AA173223	Hs.44426 ESTs	
20843	22	N93352	Hs.5983 Homo sapiens mRNA for ATP-dependent RNA helicase h46 complete cds	
10054	22	R10266	Hs.120997 ESTs Highly similar to HYPOTHETICAL GTP-BINDING PROTEIN IN PM40-PAC2 INTERGENIC REGION [Saccharomyces cerevisiae]	
34094	22	AA026038	Hs.104138 ESTs	
41246	22	R27266	Hs.23240 ESTs	
22634	22	R92837	Hs.103323 ESTs	
19686	22	H49502	Hs.28212 ESTs	
28448	22	AA521752	Hs.76887 Human 25S proteasome-associated pac1 homolog (POH1) mRNA complete cds	
651	22	D78129	EST - D78129	
20221	22	N29345	Hs.28917 ESTs	
5792	22	X54941	Hs.77550 CDC28 protein kinase 1	
28856	22	D19708	Hs.5122 Human G1 protein mRNA partial cds	
19240	22	H13265	Hs.31196 ESTs	
11686	22	AA256872	Hs.103300 Homo sapiens diphthamide biosynthesis protein-2 (DPH2) mRNA complete cds	
14152	22	AA489790	Hs.4976 Homo sapiens Ran-GTP binding protein mRNA partial cds	
38341	22	AA490967	Hs.105276 ESTs	
11803	22	AA257971	Hs.21214 ESTs	
39085	22	AA620589	Hs.24786 ESTs	
4046	22	U22378	Hs.1334 MYB PROTO-ONCOGENE PROTEIN	
11600	22	U22378	Hs.7395 ESTs Weakly similar to house-keeping protein [M. musculus]	
5051	22	U76538	Hs.54099 Human BRCA1-associated RING domain protein (BARD1) mRNA complete cds	
20674	22	N63932	Hs.128003 ESTs	

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## FIGURE 4 (CONT.)

41031	22	N91246	Hs.102897 ESTs
24711	21	Z39645	Hs.21470 ESTs
4733	22	U56658	Human unknown protein mRNA within the p53 intron 1 complete cds
29733	22	H69388	Hs.02860 EST
23155	22	T30550	Hs.22615 ESTs
34638	22	A329287	Hs.104473 EST
1889	22	L20591	Hs.1378 Annexin III (lipocortin II)
4136	22	U28014	Hs.74132 IC-42 PROTEASE PRECURSOR
20276	22	N32919	Hs.27931 ESTs
18238	22	A205389	Hs.41145 ESTs
34370	21	A446459	Hs.27569 ESTs
27896	21	A4251629	Hs.104058 ESTs Weakly similar to HYPOTHETICAL 27.4 KD PROTEIN IN MER2-CPR7 INTERGENIC REGION [Saccharomyces cerevisiae]
10804	21	A4470156	Hs.80449 ESTs Weakly similar to dynamin 74K chain cytosolic [R. norvegicus]
34552	21	A066548	Hs.18479 ESTs
18360	21	A4275985	Hs.18389 Human mRNA for KIAA0372 gene complete cds
37415	21	A4227119	Hs.70256 ESTs
14592	21	A4453807	Hs.99349 EST
5173	21	A621340	Hs.10600 ESTs Weakly similar to HYPOTHETICAL 39.8 KD PROTEIN IN MTD1-NUP133 INTERGENIC REGION [Saccharomyces cerevisiae]
19972	21	U81654	Hs.5171 Homo sapiens signal recognition particle 72 (SRP72) mRNA complete cds
23301	21	H63539	Hs.33576 ESTs
20504	21	T52847	Hs.13034 ESTs
40145	21	N52866	Hs.142838 ESTs
3481	21	H61391	Hs.81182 Human mRNA for histamine N-methyltransferase complete cds
41893	21	T23511	Hs.51251 ESTs
5807	21	A4416876	Hs.5169 ESTs Weakly similar to TRANSFORMATION-SENSITIVE PROTEIN IEF SSP 3521 [H. sapiens]
38155	21	X55740	Hs.76956 5' nucleotidase (CD73)
804	21	A4465777	Hs.105698 ESTs
8394	21	HG11231T1112	EST - HG11231T1112
25165	21	A4424262	Hs.91728 Human 75-KD subunit (PM-Scf) mRNA complete cds
23438	21	A027837	Hs.30705 Reclites pigmentosa 3 (X-linked recessive)
10898	21	W68659	Hs.77959 Tropomyosin alpha chain (skeletal muscle)
381	21	A4112063	EST - RC_A438900
22051	21	D28473	Hs.15313 ESTs Weakly similar to PRE-MRNA SPLICING HELICASE BRR2 [S. cerevisiae]
11528	21	A4280018	Hs.78770 Isolaudine-IRNA synthetase
11890	21	A4278323	Hs.31975 ESTs Weakly similar to IIIA1 SUBFAMILY J WARNING ENTRY III [H. sapiens]
5448	21	X02751	Hs.10724 ESTs Weakly similar to unknown [S. cerevisiae]
35956	21	A4412533	Hs.17461 Homo sapiens clone 24609 mRNA sequence
7525	21	A4149259	Hs.89855 Neuroblastoma RAS viral (v-ras) oncogene homolog
39552	21	F09351	Hs.106571 ESTs
28023	21	A4478479	Hs.88851 ESTs
18425	21	A4332103	Hs.16492 ESTs Weakly similar to weakly similar to S. cerevisiae PTM1 precursor [C. elegans]
20590	21	N58148	Hs.71992 ESTs
12907	21	A4427577	Hs.59112 ESTs
22958	21	T10264	Hs.47283 ESTs
14350	21	A4300598	Hs.34227 ESTs
25593	21	A4398831	Hs.26502 ESTs
26529	21	A4276594	Hs.116122 ESTs
5891	21	Y00971	Hs.28953 Homo sapiens mRNA for Cdc7-related kinase complete cds
19879	21	A4056538	Hs.8130 Homo sapiens IPL (IPL) mRNA complete cds
38240	21	A4481403	Hs.88461 EST
4111	21	U35312	Hs.2910 Phosphonoboyl pyrophosphatase synthetase 2
			Hs.83314 ESTs
			Hs.107213 ESTs
			Hs.83550 Human telomerase protein HP1/H-gamma mRNA complete cds

# FIGURE 4 (CONT.)

32878	21	W07448	Hs 41241 ESTs
25968	21	AA234925	Hs 65532 ESTs
24659	21	232711	Hs 12299 Home sapiens GDP-L-actose pyrophosphorylase (GFPp) mRNA complete cds
38032	21	AA481148	Hs 105157 ESTs
61	20	AC002115	Hs 63378 Cytochrome c oxidase subunit VIIb
31681	20	AA460675	Hs 31749 H. sapiens mRNA for TRES
27725	20	AA405505	Hs 48295 Home sapiens mRNA for putative RNA helicase 3' end
3180	20	U09851	Hs 112180 Zinc finger protein 148 (pRc-52)
9112	20	D16611	Hs 89866 Carboxypryruvate oxidase (carboxypryruvate hydratase)
7519	20	AA474725	EST - AA147425_s
14701	20	D58324	Hs 124652 ESTs
380	20	D28423	EST - D28423
825	20	D97328	Hs 79375 Holocarboxylase synthetase (beta-dimethylglutamate:ATP-lyase) [ligase]
3997	20	U19906	Hs 2131 Angiotensin receptor 1 (AVPR1)
377	20	D28364	EST - D28364
28079	20	AA609710	Hs 42582 ESTs
7322	20	AA606522	Hs 135552 ESTs Weakly similar to The KIAA0138 gene product is novel. [H. sapiens]
23358	20	H70641	EST - RC_H70641
24230	20	W72276	Hs 5950 ESTs
40212	20	H88535	Hs 5564 Human clone 121711, defective mariner transposon Hamaz2 mRNA sequence
36918	20	AA425107	Hs 87016 ESTs
25654	20	AA126951	Hs 110957 ESTs Weakly similar to DNA-directed RNA polymerase [Dmeloagaster]
16344	20	AA018807	Hs 54627 ESTs
8118	20	AA328930	Hs 104558 ESTs
29862	20	N25228	Hs 27349 ESTs
32236	20	R49327	Hs 57435 Natural resistance-associated macrophage protein 2
31972	20	AA479215	EST - RC_AA479215
34834	20	AA282855	Hs 86657 ESTs

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FIGURE 5

Primary Key	fold downregulated of Tumor vs	Accession	Ungene CLUSTER	Ungene Descriptor
2348	>10	M15655	Hs.75592	Aldolase B fructose-bisphosphate
6463	>10	X90908	Hs.74126	H.sapiens mRNA for L-15P (L-BABP) protein
42139	>10	T73335	Hs.93194	APOLIPROTEIN A-I PRECURSOR
4544	>10	U48959	Hs.75950	H.sapiens mRNA for myosin light chain kinase
1583	>10	K02765	Hs.58512	COMPLEMENT C3 PRECURSOR
2426	>10	M19828	Hs.585	Apolipoprotein B (including Aq(x) antigen)
8859	>10	AB002351	Hs.10587	Human mRNA for KIAA0353 gene partial cds
24572	>10	Z38688	Hs.24192	ESTs
17810	>10	AA151402	Hs.46531	H.sapiens mRNA for GCAP-II/uroguanylin precursor
7006	>10	Z70295	Hs.32966	EST - HG4310-HT4580
1304	>10	HG4310-	Hs.85424	Tetranectin (plasminogen-binding protein)
5980	>10	X84559	Hs.121713	Cytochrome P450 subfamily XX1 (steroid 21-hydroxylase congenital adrenal hyperplasia)
41987	>10	T47089	Hs.3807	ESTs Weakly similar to SODIUM/POTASSIUM-TRANSPORTING ATPASE GAMMA CHAIN [Mus
24461	>10	W94427	Hs.89552	Glutathione S-transferase A2
2372	>10	M16594	Hs.89552	Glutathione S-transferase A2
6001	>10	X85727	Hs.89495	Carbonic anhydrase IV
1750	>10	L10955	Hs.95655	Homo sapiens K12 protein precursor mRNA complete cds
15130	>10	U77643	Hs.28264	ESTs
12467	>10	AA402656	Hs.50404	EST - RC_R06984_s
41148	>10	R06984		Human chemokine (TCECK) mRNA complete cds
31652	>10	N73958		EST - U51010
4605	>10	U51010		ESTs
28359	>10	AA609133	Hs.58115	ESTs
24066	>10	W32506	Hs.11676	ESTs Weakly similar to HEAT SHOCK 27 KD PROTEIN [H.sapiens]
33282	>10	W73194	Hs.80552	ESTs
12084	>10	AA284767	Hs.21910	ESTs
41473	>10	R48732	Hs.11006	ESTs
27108	>10	AA404397	Hs.58414	ESTs Highly similar to ENDOTHELIAL ACTIN-BINDING PROTEIN [Homo sapiens]
2848	>10	M58286	Hs.159	TUMOR NECROSIS FACTOR RECEPTOR 1 PRECURSOR
19537	>10	H30270	Hs.32583	ESTs
18784	>10	F09748	Hs.7974	ESTs
5773	>10	XS4162	Hs.79386	64 KD AUTOANTIGEN D1

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# FIGURE 5 (CONT.)

27387	>10	AA426330	Hs.78264	ESTs
2866	>10	M59815	Hs.76682	Complement component 4A
42530	>10	W72859	Hs.74669	ESTs Weakly similar to SYNAPTOBREVIN 2 [H.sapiens]
827	>10	D67433	Hs.84753	Human mRNA for KIAA0246 gene partial cds
650	>10	D78014	Hs.74566	Human mRNA for dihydropyrimidinase related protein-3 complete cds
7026	>10	Z80345	Hs.127610	Acyl-Coenzyme A dehydrogenase C-2 to C-3 short chain
16736	>10	AA045306	Hs.42996	ESTs
4630	>10	U52101	Hs.9999	Human YMP mRNA complete cds
4855	>10	U52669	Hs.80296	BRAIN SPECIFIC POLYPEPTIDE PEP-19
42758	>10	Z41411	Hs.107040	ESTs
35637	>10	AA402933	Hs.29283	ESTs
40392	>10	H95587	Hs.108880	ESTs
7354	>10	AA092346	Hs.7858	ESTs
9034	>10	C01833	Hs.29759	ESTs Weakly similar to IIII ALU SUBFAMILY SX WARNING ENTRY IIII [H.sapiens]
10835	>10	AA121534	Hs.8923	ESTs Highly similar to TUBULIN BETA-5 CHAIN [Gallus gallus]
5520	>10	X08256	Hs.119218	Integrin alpha 5 (fibronectin receptor alpha polypeptide)
2547	>10	M25809	Hs.1009	ATPase H+ transporting lysosomal (vacuolar proton pump) beta polypeptide 55/58kD isoform 1
9003	>10	C00808	Hs.107882	ESTs
41628	>10	R70212	Hs.79630	Immunoglobulin-associated alpha
21934	>10	R44449	Hs.48778	ESTs
11129	8	AA156873	Hs.15970	ESTs
40387	7	H99460	Hs.108873	ESTs

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FIGURE 6

Primary Key	fold downregulated of Tumor	Accession	Unigene CLUSTER	Unigene Descriptor
2348	>10	M15656	Hs.75592	Adolase B fructose-bisphosphate
6463	>10	X90908	Hs.74126	H.sapiens mRNA for I-15P (I-BABP) protein
42139	>10	T73335	Hs.93194	APOLIPROTEIN A-I PRECURSOR
4544	>10	U48959	Hs.75950	H.sapiens mRNA for myosin light chain kinase
1583	>10	K02765	Hs.58512	COMPLEMENT C3 PRECURSOR
2426	>10	M19828	Hs.585	Apolipoprotein B (including Ag(x) antigen)
8659	>10	AB002351	Hs.10587	Human mRNA for KIAA0353 gene partial cds
24572	>10	Z38688	Hs.24192	ESTs
17810	>10	AA151402	Hs.46531	ESTs
7006	>10	Z70295	Hs.32966	H.sapiens mRNA for GCAP-II/uroguanylin precursor
1304	>10	HG4310-	Hs.65424	EST - HG4310-HT4580
5980	>10	X64559	Hs.121713	Tetaneclin (plasminogen-binding protein)
41987	>10	T47089	Hs.3807	Cytochrome P450 subfamily XXI (steroid 21-hydroxylase congenital adrenal hyperplasia)
24461	>10	W94427	Hs.89552	ESTs Weakly similar to SODIUM/POTASSIUM-TRANSPORTING ATPASE GAMMA CHAIN [Mus musculus]
2372	>10	M16594	Hs.89552	Glutathione S-transferase A2
6001	>10	X65727	Hs.89552	Glutathione S-transferase A2
1750	>10	L10955	Hs.89485	Carbonic anhydrase IV
15130	>10	U77643	Hs.95655	Homo sapiens K12 protein precursor mRNA complete cds
12467	>10	AA402656	Hs.28264	ESTs
41148	>10	R06984	Hs.50404	EST - RC_R06984_s
31652	>10	N73958	Hs.143289	Human chemokine (TECK) mRNA complete cds
23483	>10	T68873	Hs.143289	H.sapiens mRNA for metallothionein isoform 1R
4805	>10	U51010	Hs.58115	EST - U51010
28359	>10	AA609133	Hs.111676	ESTs
24066	>10	W32506	Hs.80552	ESTs Weakly similar to HEAT SHOCK 27 KD PROTEIN [H.sapiens]
33282	>10	W73194	Hs.80552	ESTs
12084	>10	AA284767	Hs.21910	ESTs
41473	>10	R48732	Hs.11006	ESTs
32568	>10	T29248	Hs.143113	Human pancreatic lipase related protein 2 (PLRP2) mRNA complete cds
6413	>10	X87159	Hs.37129	Sodium channel nonvoltage-gated 1 beta (Liddle syndrome)
20707	>10	N64436	Hs.20813	ESTs
27108	>10	AA404397	Hs.58414	ESTs Highly similar to ENDOTHELIAL ACTIN-BINDING PROTEIN [Homo sapiens]
12477	>10	AA403032	Hs.21701	ESTs
42059	>10	T61654	Hs.93194	APOLIPROTEIN A-I PRECURSOR
25468	>10	AA079072	Hs.1477	Insulin-like growth factor binding protein 6
26910	>10	AA303081	Hs.78293	ESTs

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FIGURE 6 (CONT.)

16938	>10	AA059473	Hs.56783	ESTs
41788	>10	T03735	Hs.26885	ESTs
7754	>10	AA234634	Hs.76722	Human NF-IL6-beta protein mRNA complete cds
6122	>10	X72012	Hs.75962	Endoglin (Osler-Rendu-Weber syndrome 1)
2848	>10	M58285	Hs.159	TUMOR NECROSIS FACTOR RECEPTOR 1 PRECURSOR
23013	>10	T16861	Hs.6725	ESTs
19537	>10	H30270	Hs.32583	ESTs
4584	>10	U50360	EST - U50360	ESTs
37410	>10	AA453652	Hs.98344	ESTs
27989	>10	AA464594	Hs.63382	ESTs
35497	>10	AA400606	Hs.144344	EST
37013	>10	AA443690	Hs.136268	ESTs Highly similar to ZINC FINGER PROTEIN HF.12 [Homo sapiens]
39247	>10	AA621553	Hs.112998	ESTs
13471	>10	AA452598	Hs.109590	ESTs
42110	>10	T68878	Hs.76888	Carboxylesterase 2 (liver)
10965	>10	AA128997	Hs.18953	Homo sapiens cGMP-specific phosphodiesterase (PDE9A2) mRNA complete cds
4918	>10	U67733	Hs.3631	Human cGMP-stimulated 3',5'-cyclic nucleotide phosphodiesterase PDE2A3 (PDE2A) mRNA complete cds
40737	>10	N54950	Hs.81454	H.sapiens KHK mRNA for ketohexokinase clone pHKHK3a
30403	>10	N45300	Hs.110847	Meis1 (mouse) homolog
11432	>10	AA233369	Hs.361	ESTs
18784	>10	F09748	Hs.7974	ESTs
40662	>10	N49281	EST - RC_N49281	ESTs
5773	>10	X54162	Hs.79386	64 KD AUTOANTIGEN D1
35041	>10	AA350586	Hs.30862	ESTs
20868	>10	N70068	Hs.7243	ESTs
39729	>10	H11489	Hs.105805	ESTs
27387	>10	AA426330	Hs.78264	ESTs
39758	>10	H15814	Hs.80485	Human apM1 mRNA for GS3109 (novel adipose specific collagen-like factor) complete cds
4319	>10	U37283	Hs.58882	Human microfilament-associated glycoprotein-2 MAGP-2 mRNA complete cds
2866	>10	M59815	Hs.76882	Complement component 4A
30332	>10	N39075	Hs.44934	EST
41344	>10	R40189	Hs.6985	ESTs
28271	>10	AA521200	Hs.48778	ESTs
5834	>10	X57129	Hs.7644	HISTONE H1D
18048	>10	H05464	Hs.100251	ESTs
1429	>10	J02854	Hs.9615	Human 20-kDa myosin light chain (MLC-2) mRNA complete cds
19481	>10	H27910	Hs.107384	ESTs
28992	>10	N26366	Hs.33084	Solute carrier family 2 (facilitated glucose transporter) member 5
2041	>10	L36033	Hs.77423	Stromal cell-derived factor 1
22865	>10	R99909	Hs.36186	ESTs

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# FIGURE 6 (CONT.)

11624	>10	AA243654	Hs.17998	ESTs
12512	>10	AA405199	Hs.20733	ESTs
41443	>10	R45577	Hs.10683	ESTs
5055	>10	U77180	Hs.50002	Human mRNA for EB1-ligand chemokine complete cds
8038	>10	X66945	Hs.748	Basic fibroblast growth factor (bFGF) receptor (shorter form)
42530	>10	W72859	Hs.74869	ESTs Weakly similar to SYNAPTOBREVIN 2 [H.sapiens]
827	>10	D67433	Hs.84753	Human mRNA for KIAA0246 gene partial cds
650	>10	D78014	Hs.74566	Human mRNA for dihydropyrimidinase related protein-3 complete cds
37350	>10	AA452605	Hs.99289	EST
37488	>10	AA455178	Hs.99397	ESTs
36646	>10	AA431797	Hs.98763	EST
38999	>10	AA609907		EST - RC_AA609907
38191	>10	AA487895	Hs.17311	ESTs
9944	>10	N57464	Hs.74570	Human mRNA for KIAA0146 gene partial cds
8139	>10	AA341723	Hs.107374	ESTs
41522	>10	R53966	Hs.75092	N-CHIMAERIN
36090	>10	AA482603	Hs.111301	Matrix metalloproteinase 2 (gelatinase A 72kD gelatinase 72kD type IV collagenase)
41175	>10	R09241		EST - RC_R09241
36947	>10	AA437388	Hs.115726	ESTs
4175	>10	U29953	Hs.76110	Pigment epithelium-derived factor
35421	>10	AA399686	Hs.97669	EST
4358	>10	U39487	Hs.250	Xanthine dehydrogenase
35463	>10	AA400272	Hs.97758	EST
7026	>10	Z80345	Hs.127610	Acyl-Coenzyme A dehydrogenase C-2 to C-3 short chain
34625	>10	AA282238	Hs.118463	Homo sapiens clone 24519 unknown mRNA partial cds
20179	>10	N24879	Hs.9693	ESTs
36805	>10	AA435901	Hs.56874	ESTs Weakly similar to p20 protein [R.norvegicus]
24447	>10	W93121	Hs.23841	Human mRNA for KIAA0365 gene complete cds
10247	>10	R74386	Hs.108924	ESTs
3618	>10	U02388	Hs.101	Leukotiene B4 omega hydroxylase (cytochrome P450 subfamily IVF)
1464	>10	J03474	Hs.3157	SERUM AMYLOID A PROTEIN PRECURSOR
16842	>10	AA055163	Hs.57975	Homo sapiens mRNA for cardiac caldesmon complete cds
16736	>10	AA045306	Hs.42966	ESTs
22666	>10	R65880	Hs.33455	ESTs
5248	>10	U86358	Hs.50404	Human chemokine (TCEK) mRNA complete cds
7510	>10	AA136353	Hs.38022	ESTs
34683	>10	AA284920	Hs.13716	ESTs
18986	>10	H89980	Hs.12112	ESTs Moderately similar to protein phosphatase 1 binding protein PTG [M.musculus]
9959	>10	N75215	Hs.43148	ESTs
38136	>10	AA486185	Hs.126176	ESTs

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## FIGURE 6 (CONT.)

38702	>10	AA434108	Hs.101393	ESTs Moderately similar to DNAJ PROTEIN HOMOLOG 1 [Homo sapiens]
3357	>10	M99487	Hs.1915	PROSTATE-SPECIFIC MEMBRANE ANTIGEN
36783	>10	AA435805	Hs.112085	EST
4876	>10	U66061	Hs.2048	Protease serine 2 (trypsin 2)
41149	>10	R06986	Hs.76487	ESTs
15925	>10	Y13492	Hs.78483	Homo sapiens mRNA for smoothelin
12944	>10	AA428258	Hs.8769	ESTs
9317	>10	D87468	Hs.40888	Human mRNA for KIAA0278 gene partial cds
19331	>10	H17865	Hs.23213	ESTs
5032	>10	U74382	Hs.90357	Homo sapiens telomeric repeat binding factor (TRF1) mRNA complete cds
34239	>10	AA235009	Hs.32246	ESTs
32852	>10	W31906	Hs.116428	ESTs
6432	>10	X89066	Hs.94413	Transient receptor potential channel 1
37001	>10	AA443311	Hs.98998	ESTs
4630	>10	U52101	Hs.9999	Human YMP mRNA complete cds
19489	>10	H27852	Hs.28137	ESTs
23028	>10	T17215	Hs.6952	ESTs
33559	>10	AA399061	Hs.112961	ESTs Moderately similar to PANCREATITIS-ASSOCIATED PROTEIN 1 PRECURSOR [H.sapiens]
4655	>10	U52969	Hs.80296	BRAIN SPECIFIC POLYPEPTIDE PEP-19
26030	>10	AA235984	Hs.87469	ESTs
41348	>10	R40395	Hs.112125	Lecithin-cholesterol acyltransferase
14494	>10	AA609645	Hs.25632	ESTs Weakly similar to PNG gene [H.sapiens]
4453	>10	U43916	Hs.79368	Human epithelial membrane protein (CL-20) mRNA complete cds
42758	>10	Z41411	Hs.107040	ESTs
35537	>10	AA402933	Hs.29283	ESTs
40392	>10	H99587	Hs.108880	ESTs
19366	>10	H19204	Hs.133466	ESTs
5184	>10	U82169	Hs.87234	Human frizzled homolog (FZD3) mRNA complete cds
859	>10	D87468	Hs.40888	Human mRNA for KIAA0278 gene partial cds
1595	>10	K03207	Hs.103972	Salivary proline-rich protein
15574	>10	W38778	Hs.26216	ESTs
8985	>10	C00125	Hs.24332	ESTs Weakly similar to deoxyribose-phosphate aldolase [C.elegans]
33995	>10	AA182845	Hs.139088	Homo sapiens FIP2 alternatively translated mRNA complete cds
7949	>10	AA283820	Hs.34956	ESTs
11670	>10	AA252191	Hs.25199	Homo sapiens PAC clone DJ130H16 from 22q12.1-qter
7354	>10	AA092348	Hs.7858	ESTs
36151	>10	AA419011	Hs.96744	ESTs
42136	>10	T72491	Hs.73849	Apolipoprotein C-III
289	>10	D16480	Hs.75860	Hydroxyacyl-Coenzyme A dehydrogenase/3-ketoacyl-Coenzyme A thiolase/enoyl-Coenzyme A hydratase (trifunctional protein) alpha subunit
41379	>10	R42233	Hs.106487	Homo sapiens mRNA for KIAA0673 protein partial cds

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## FIGURE 6 (CONT.)

34764	>10	AA287870	Hs.890	Lymphotoxin-beta
24515	>10	Z38289	Hs.12701	ESTs
18652	>10	F03111	Hs.22505	ESTs
37815	>10	AA469952	Hs.97899	ESTs
9034	>10	C01833	Hs.29759	ESTs Weakly similar to !!!!! ALU SUBFAMILY SX WARNING ENTRY !!!!! [H.sapiens]
34805	>10	AA291522	Hs.97250	EST
12246	>10	AA348198	Hs.14829	Homo sapiens mRNA for GABA-BR1a (nGB1a) receptor
42153	>10	T77729	Hs.89890	Pyruvate carboxylase
27110	>10	AA404494	Hs.84112	CTP synthetase
28831	>10	D59722	Hs.92924	ESTs
6333	>10	X82494	Hs.2653	Fibulin 2
10935	>10	AA121534	Hs.6923	ESTs Highly similar to TUBULIN BETA-5 CHAIN [Gallus gallus]
27257	>10	AA418001	Hs.46146	ESTs Weakly similar to mitogen-activated kinase kinase kinase 5 [H.sapiens]
3631	>10	U03090	Hs.290	Homo sapiens Ca2+-dependent phospholipase A2 mRNA complete cds
4752	>10	U59632	Hs.3847	Glycoprotein Ib (platelet) beta polypeptide
3766	>10	U09579	Hs.74984	CYCLIN-DEPENDENT KINASE INHIBITOR 1
4310	>10	U37055	Hs.76034	Macrophage stimulating 1 (hepatocyte growth factor-like)
26923	>10	AA342302	Hs.55036	ESTs
5520	>10	X06256	Hs.119218	Integrin alpha 5 (fibronectin receptor alpha polypeptide)
16720	>10	AA044732	Hs.77208	ESTs
25336	>10	AA053405	Hs.101404	ESTs
2547	>10	M25809	Hs.1009	ATPase H+ transporting lysosomal (vacuolar proton pump) beta polypeptide 56/58kD isoform 1
9796	>10	M63509	Hs.73974	Glutathione S-transferase M2 (muscle)
5205	>10	U82979	Hs.67846	Human clone HM18 monocytic inhibitory receptor precursor mRNA complete cds
9377	>10	H12574	Hs.9396	ESTs
41960	>10	T33511	Hs.4844	ESTs
21911	>10	R43980	Hs.26320	ESTs
16225	>10	AA011305	Hs.10029	Cathepsin C
16071	>10	AA001426	Hs.40863	ESTs
29335	>10	H68239	Hs.39122	ESTs
34966	>10	AA344866	Hs.1285	Complement component 8 gamma polypeptide
21076	>10	N95976	Hs.8016	ESTs
4402	>10	U41518	Hs.74602	AQUAPORIN-CHIP
20423	>10	N49308	Hs.104938	ESTs
16575	>10	AA031948	Hs.57548	ESTs
28264	>10	AA521080	Hs.46765	ESTs
9003	>10	C00808	Hs.107882	ESTs
5632	>10	X15357	EST - X15357	
20852	>10	N69540	Hs.17713	ESTs
34565	>10	AA281002	Hs.40735	ESTs

## FIGURE 6 (CONT.)

33690	>10	Z38607	Hs.62248	ESTs	
8904	>10	AF002256	Hs.86180	Homo sapiens killer cell receptor (KIR103) mRNA allele ASD1 complete cds	
3307	>10	M95809	Hs.89578	BASIC TRANSCRIPTION FACTOR 62 KD SUBUNIT	
39200	>10	AA621246	Hs.112956	EST	
24712	>10	Z39652	Hs.27457	ESTs	
2199	>10	L49169	Hs.75678	Human GOS3 mRNA complete cds	
38942	>10	AA609646	Hs.94970	Human mRNA for KIAA0305 gene partial cds	
41628	>10	R70212	Hs.79630	Immunoglobulin-associated alpha	
6834	>10	Z18954	Hs.2960	S100 calcium-binding protein A5 (formerly S100D)	
40562	>10	N33212	Hs.107197	ESTs	
37333	>10	AA452158	Hs.75122	TRANSFORMING PROTEIN RHOB	
3992	>10	U19713	Hs.76364	Allograft inflammatory factor 1	
38734	>10	AA608792	Hs.112591	EST	
37836	>10	AA470135	Hs.112238	ESTs	
10000	>10	N79674	Hs.7915	ESTs	
30658	>10	N51105	Hs.111223	ESTs	
17629	>10	AA131919	Hs.69009	ESTs	
36260	>10	AA423970	Hs.98378	ESTs	
24122	>10	W46947	Hs.4188	ESTs	
1066	>10	HG2705-	HG2705-HT2801	EST - HG2705-HT2801	
12389	>10	AA398633	Hs.24872	ESTs	
26025	>10	AA235874	Hs.88888	PUTATIVE DNA BINDING PROTEIN A20	
41104	>10	R01398		EST - RC_R01398	
33586	>10	W93015	Hs.73166	Treacher Collins syndrome susceptibility protein	
25379	>10	AA058893	Hs.111841	Human adenyl cyclase-associated protein homolog CAP2 (CAP2) mRNA complete cds	
17907	>10	AA160530	Hs.72447	ESTs	
38838	>10	AA436163	Hs.95851	Homo sapiens Pig12 (PIG12) mRNA complete cds	
19524	>10	H29566	Hs.83466	Homo sapiens clone 23579 mRNA sequence	
21934	>10	R44449	Hs.48778	ESTs	
32456	>10	T15829	Hs.65264	ESTs	
15440	>10	W27301	Hs.111652	ESTs Moderately similar to PUTATIVE SERINE/THREONINE-PROTEIN KINASE PKWA [Thermomonospora curvata]	
2807	>10	M55210	Hs.87428	Laminin gamma 1 (formerly LAMB2)	
34193	>10	AA232251	Hs.128630	ESTs	
14584	>10	AA621414	Hs.110503	Homo sapiens transmembrane protein mRNA complete cds	
38752	>10	AA608852	Hs.112603	EST	
5294	>10	U90065	Hs.79351	Human two P-domain K+ channel TWIK-1 mRNA complete cds	
84	>10	AF001359		EST - AF001359_f	
4855	>10	U65093	Hs.82071	Human msg1-related gene 1 (msg1) mRNA complete cds	
13974	>10	AA479299	Hs.21107	ESTs	
26151	>10	AA250836	Hs.108509	ESTs	

## FIGURE 6 (CONT.)

5938	>10	X62535	Hs.74044	Diacylglycerol kinase alpha (80kD)
17717	>10	AA136541	Hs.71847	EST
12404	>10	AA400292	Hs.23786	ESTs
2407	>10	M18737	Hs.90708	GRANZYME A PRECURSOR
26620	10	AA280413	Hs.89843	Spleen focus forming virus (SFFV) proviral integration oncogene sp1
37675	10	AA460377	Hs.99816	ESTs
41827	10	T15445	Hs.99491	H.sapiens mRNA for F25B3.3 kinase like protein from C.elegans
82	10	AF000959	Hs.110903	Homo sapiens transmembrane protein mRNA complete cds
203	10	D12620	Hs.106242	CYTROCHROME P450 IVF3
24159	10	W57862	Hs.21289	ESTs
5302	10	U90543	Hs.79041	Human butyrophilin (BTF1) mRNA complete cds
2219	10	L76870	Hs.109610	Homo sapiens nkat7 mRNA complete cds
24392	10	W88568	Hs.58589	Homo sapiens glycogenin-2 gamma (glycogenin-2) mRNA complete cds
36159	10	AA419279	Hs.82813	Colony-stimulating factor 1 (M-CSF)
28251	10	AA504512	Hs.76852	ESTs Weakly similar to ZK792.1 [C.elegans]
37592	10	AA458668	Hs.95898	ESTs
39819	9	F10640	Hs.12354	ESTs
8240	9	AA397841	Hs.106879	ESTs
10887	9	AA101632	Hs.22971	ESTs
37500	9	AA455474	Hs.100530	ESTs
42650	9	W92272	Hs.25501	Homo sapiens zinc-finger helicase (hZFH) mRNA complete cds
9011	9	C01394	Hs.106823	Homo sapiens clone 24818 mRNA sequence
3490	9	S77763	Hs.75643	Homo sapiens NF-E2 protein (NF-E2) mRNA complete cds
36691	9	AA432381	Hs.97357	ESTs Moderately similar to NITRIC OXIDE SYNTHASE INDUCIBLE [H.sapiens]
3478	9	S76992	Hs.104005	Vav 2 oncogene
42034	9	T56281	Hs.110440	Human metallothionein (MT)-I gene
11845	9	AA259084	Hs.10839	ESTs Weakly similar to unknown [S.cerevisiae]
19317	9	H17476	Hs.11615	ESTs Weakly similar to dual specificity phosphatase [H.sapiens]
42395	8	W42733	Hs.109870	ESTs
11425	8	AA233257	Hs.25511	Homo sapiens mRNA for Hic-5 partial cds
15310	8	W19098	Hs.7921	ESTs
36601	8	AA431337	Hs.98017	ESTs
13499	8	AA453458	Hs.7301	ESTs
37514	8	AA455914	Hs.1019	Parathyroid hormone receptor 1
5998	8	X65644	Hs.75063	HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 ENHANCER-BINDING PROTEIN 2
33589	8	W93074	Hs.59342	ESTs
5801	8	X55448	Hs.3118	H.sapiens mRNA for 2.19 gene
11129	8	AA156873	Hs.15970	ESTs
31987	8	N84551	Hs.55060	ESTs
40438	8	N21684	Hs.80500	Human mRNA for KIAA0061 gene partial cds



## FIGURE 6 (CONT.)

34471	8	AA258843	Hs.111376	ESTs	
25530	8	AA098834	Hs.83428	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1 (p105)	
39471	7	D60265	Hs.107894	ESTs	
25100	7	AA019426	Hs.103343	EST	
15915	7	Y09858	Hs.82577	Human DNA sequence from clone 323P24 on chromosome Xp11.21-11.23 Contains SPIN (spindlin homolog (PROTEIN DXF34) hypothetical protein E	
19097	7	H08171	Hs.30842	ESTs	
35353	7	AA398962	Hs.97699	ESTs	
36822	7	AA359978	Hs.98852	EST	
35530	7	AA400893	Hs.41717	Human 3'5' cyclic nucleotide phosphodiesterase (HSPDE1A3A) mRNA complete cds	
3869	7	U14417	Hs.106185	Human Rai guanine nucleotide dissociation stimulator mRNA partial cds	
1979	7	L29339	Hs.1964	Solute carrier family 5 (sodium/glucose cotransporter) member 1	
26178	7	AA251153	Hs.27910	Homo sapiens centrosomal Nek2-associated protein 1 (C-NAP1) mRNA complete cds	
36428	7	AA427605	Hs.98551	Human cardiac myosin binding protein-C (MyBP-C) gene complete cds	
26333	7	AA256075	Hs.82280	Homo sapiens regulator of G protein signaling 10 mRNA complete cds	
40387	7	H99460	Hs.108873	ESTs	
27236	7	AA417037	Hs.67805	ESTs	
20083	7	H99879	Hs.28029	ESTs Highly similar to EPIDERMAL GROWTH FACTOR PRECURSOR [Mus musculus]	
21561	7	R33245	Hs.23076	ESTs	
21223	7	R08175	Hs.110130	Homo sapiens chromosome 19 cosmid F23329	
13405	7	AA450118	Hs.25722	ESTs Weakly similar to KRUPPEL-RELATED ZINC FINGER PROTEIN 1 [Homo sapiens]	
34845	7	AA293420	Hs.95464	ESTs Moderately similar to transcription enhancer factor TEF1 [H.sapiens]	
15059	7	U53831	Hs.85280	Human interferon regulatory factor 7 (humirf7) mRNA complete cds	
1945	7	L25878	Hs.89649	Epoxide hydrolase 1 microsomal (xenobiotic)	
42648	7	W92150	Hs.79310	Human GAP SH3 binding protein mRNA complete cds	
20041	7	H97012	Hs.11050	ESTs Weakly similar to L8004.7 gene product [S.cerevisiae]	
7053	6	Z84721	Hs.75792	Hemoglobin alpha 1	
23843	6	T92561	Hs.110422	ESTs	
25815	6	AA149889	Hs.96200	ESTs Weakly similar to A-kinase anchor protein 95 AKAP95 [R.norvegicus]	
8473	6	AA437346	Hs.2967	SHB adaptor protein (a Src homology 2 protein)	
34618	6	AA282143	Hs.55094	H.sapiens mRNA for melanoma growth regulatory protein MJA	
11074	6	AA148983	Hs.29068	ESTs	
17533	6	AA127098	Hs.71057	EST	
28973	6	F04014	Hs.65996	ESTs	
17042	6	AA070397		EST - RC_AA070397	
15246	6	W01094	Hs.84628	ESTs	
2247	6	M10321	Hs.110802	VON WILLEBRAND FACTOR PRECURSOR	
30810	6	N53419	Hs.47646	ESTs	
13348	6	AA449267	Hs.17914	ESTs Weakly similar to HIGH AFFINITY IMMUNOGLOBULIN EPSILON RECEPTOR BETA-SUBUNIT [M.musculus]	
1789	6	L13258	Hs.936	Solute carrier family 17 (sodium phosphate) member 2	
16627	5	AA036779	Hs.61826	Homo sapiens clone 23928 mRNA sequence	

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## FIGURE 6 (CONT.)

27103	5	AA040282	Hs.63481	ESTs Weakly similar to kynurenine/alpha-aminoadipate aminotransferase [R.norvegicus]
12631	5	AA412293	Hs.21258	ESTs
11599	5	AA242829	Hs.7508	ESTs
9010	5	C01360	Hs.67364	Homo sapiens clone 23904 mRNA sequence
4660	5	U53225	Hs.75283	Sording nexin 1
5244	5	U85992	Hs.87197	Human clone IMAGE:35527 unknown protein mRNA partial cds
7953	5	AA284403	Hs.74750	Homo sapiens mRNA for KIA00554 protein partial cds
27617	5	AA446114	Hs.55409	ESTs
39480	5	D60419	Hs.81915	STATHMIN
37529	5	AA455112	Hs.99410	ESTs
11858	5	AA262308	Hs.106385	ESTs
37294	5	AA450127	Hs.110571	ESTs Highly similar to MYELOID DIFFERENTIATION PRIMARY RESPONSE PROTEIN MYD118 [Mus musculus]
23201	5	T40852	Hs.8279	ESTs
28767	5	D45608	Hs.83792	Surfactant pulmonary-associated protein D
3151	4	M83652	Hs.53155	Properdin P factor complement
29196	4	H24456	Hs.85053	Homo sapiens clone 24440 mRNA sequence
12863	4	AA425782	Hs.27973	ESTs
42486	4	W68410	Hs.108857	Calbindin 2 (29kD calretinin)
23571	4	T80828	Hs.108169	ESTs
12376	4	AA399271	Hs.19610	ESTs
27894	4	AA460319	Hs.48469	ESTs
24935	4	AFFX-		AFFX-HJMGAPDH/M33197_M
4238	4	U33053	Hs.2499	Human lipid-activated protein kinase PRK1 mRNA complete cds
41844	4	T15833	Hs.100227	EST
20111	4	N21380	Hs.25497	H.sapiens mRNA for ROX protein
8316	4	AA410529	Hs.30732	ESTs
39794	4	H21819	Hs.14896	Homo sapiens clone 24590 mRNA sequence
1517	4	J04501	Hs.772	Glycogen synthase 1 (muscle)
9164	4	D38091	Hs.89887	Thromboxane A2 receptor
35027	4	AA349996	Hs.96937	ESTs
14158	4	AA490182	Hs.118598	ESTs
41950	4	T33137	Hs.7967	ESTs
34360	4	AA251547	Hs.104358	EST
6547	4	X95808	Hs.9568	Human mRNA for KIA00385 gene complete cds
20863	4	N69989	Hs.19167	ESTs
12734	4	AA419200	Hs.5737	ESTs
39497	4	D80154	Hs.56340	ESTs
1600	4	K03474		EST - K03474
27148	4	AA406231	Hs.100113	Human mRNA for KIA00381 gene partial cds
10763	4	AA057620	Hs.30807	ESTs

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## FIGURE 6 (CONT.)

17007	4	AA069696	Hs.57317	ESTs	
13522	4	AA454115	Hs.6000	ESTs	
18444	4	AA232646	Hs.88061	ESTs	
27665	3	AA447759	Hs.134724	ESTs	
21382	3	R16896	Hs.89615	PROTEIN KINASE C THETA TYPE	
2052	3	L36818	Hs.75339	Inositol polyphosphate phosphatase-like protein 1 (51C protein)	
9039	3	C02049	Hs.106291	ESTs	
34888	3	AA303078	Hs.94479	Human GT334 protein (GT334) gene mRNA complete cds	
11047	3	AA142849	Hs.22650	ESTs	
19451	3	H23747	Hs.31697	ESTs	
2822	3	M55621	Hs.117946	N-acetylglucosaminyltransferase I	
13928	3	AA478441	Hs.11590	ESTs	
12064	3	AA263848	Hs.11367	ESTs Weakly similar to KIAA0009 [H.sapiens]	
3636	3	U12707	Hs.2157	Wiskott-Aldrich syndrome (eczema-thrombocytopenia)	
4528	3	U48251	Hs.75871	Homo sapiens protein Kinase C-binding protein RACK7 mRNA partial cds	
42064	3	T63364	Hs.9225	ESTs Highly similar to FIBRINOGEN-LIKE PROTEIN A PRECURSOR [Parastichopus parvimensis]	
4596	3	U50743	Hs.19520	Sodium/potassium ATPase gamma subunit	
4914	3	U67611	EST - U67611		
20168	3	N24106	Hs.2799	Cartilage linking protein 1	
24281	3	W79773	Hs.16511	ESTs	
19634	3	H44866	Hs.31597	ESTs	
10989	3	AA132366	Hs.8023	Homo sapiens mRNA for SPOP	
6587	3	X97748	EST - X97748		
14096	3	AA487558	Hs.8135	ESTs	
13350	3	AA449297	Hs.8944	ESTs Weakly similar to type 1 procollagen C-proteinase enhancer protein precursor [H.sapiens]	
33930	3	AA169539	Hs.95870	ESTs	
34215	3	AA233855	Hs.104252	UTROPHIN	
22509	3	R71393	Hs.29190	ESTs	
20065	3	H98657	Hs.27291	ESTs	
31091	3	N63076	Hs.138746	EST	
2493	3	M22919	Hs.77385	MYOSIN LIGHT CHAIN ALKALI SMOOTH-MUSCLE (ISOFORM	
28913	3	F01560	Hs.22583	ESTs Highly similar to co-repressor protein [M.musculus]	
14323	3	AA598575	Hs.12881	ESTs	
34914	3	AA338729	Hs.133096	ESTs	
14236	3	AA496891	Hs.5011	ESTs Weakly similar to The ha1237 gene product is related to S.pombe rad21 gene product. [H.sapiens]	
24594	3	Z38804	Hs.22535	ESTs Highly similar to OPIOID BINDING PROTEIN/CELL ADHESION MOLECULE PRECURSOR [Bos taurus]	
22589	3	R79580	Hs.29874	ESTs	
22156	3	R52145	Hs.25894	ESTs	
15404	3	AA021284	Hs.60554	ESTs Moderately similar to sodium-calcium exchanger form 3 [R.norvegicus]	
29310	3	H66642	Hs.88729	ESTs	

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## FIGURE 6 (CONT.)

9758	3	M26393	Hs.127610	Acyl-Coenzyme A dehydrogenase C-2 to C-3 short chain
9806	2	M79462	Hs.89633	Probable transcription factor PML (alternative products)
19289	2	H16568	Hs.23748	ESTs
34031	2	AA192614	Hs.83577	Human LIM protein MLP mRNA complete cds
33299	2	W73790	Hs.73803	IMMUNOGLOBULIN-RELATED 14.1 PROTEIN PRECURSOR
3276	2	M93718	Hs.75983	Nitric oxide synthase 3 (endothelial cell)
31704	2	N75055	Hs.14632	ESTs
10310	2	R87373	Hs.75429	ESTs
22388	2	R63695	Hs.1432	Protein kinase C substrate 80K-H
20938	2	N73988	Hs.37477	ESTs Weakly similar to No definition line found [C.elegans]
5935	2	X62466	Hs.108338	CDW52 antigen (CAMPATH-1 antigen)
41485	2	R49889	Hs.5260	ESTs Weakly similar to C06G8.3 [C.elegans]
25403	2	AA063316	EST - RC_AA063316	EST - RC_AA063316
27985	2	AA464267	Hs.24912	Homo sapiens bicuculal-D (BICD) mRNA complete cds
40632	2	N45221	EST - RC_N45221	EST - RC_N45221
15527	2	W28798	Hs.63260	Phosphodiesterase 6A cGMP-specific rod alpha
31672	2	N74336	Hs.91681	ESTs
964	2	HG1804-	EST - HG1804-HT1829	EST - HG1804-HT1829
12439	2	AA401452	Hs.32060	ESTs
24223	2	W70158	Hs.29696	ESTs
21082	2	N93764	Hs.10175	ESTs Weakly similar to hypothetical protein [H.sapiens]
34140	2	AA215637	Hs.104186	ESTs
5130	2	U79288	Hs.85053	Homo sapiens clone 24440 mRNA sequence
30041	2	N27628	Hs.132744	Homo sapiens clone 24525 mRNA sequence
19202	2	H11509	Hs.22482	ESTs
41350	2	R40442	Hs.75652	Glutathione S-transferase M5
914	2	HG1019-	EST - HG1019-HT1019	EST - HG1019-HT1019
31958	2	N93495	Hs.54960	ESTs
12014	2	AA281769	Hs.7214	Human Hpast (HPAST) mRNA complete cds
39777	2	H18412	Hs.75253	Human clone ID 193225 NAD (H)-specific isocitrate dehydrogenase gamma subunit mRNA alternatively spliced partial cds
19147	2	H09751	Hs.117619	ESTs
11199	2	AA176446	Hs.10024	ESTs
6477	2	X91504	Hs.84904	Transcription factor COUP 2 (a.k.a. ARP1)
16336	2	AA018601	Hs.75649	EXTRACELLULAR SIGNAL-REGULATED KINASE 3
24058	2	W23709	Hs.109047	ESTs
26180	2	AA251230	Hs.112272	ESTs
37177	2	AA447988	Hs.7765	ESTs
41984	2	T47601	Hs.138805	ESTs
36532	2	AA429889	Hs.68882	Acrosin
1450	2	J03071	Hs.115352	Growth hormone 1

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## FIGURE 6 (CONT.)

24819	2	Z40923	Hs.24812	ESTs	
6532	2	X95325	Hs.89491	DNA-BINDING PROTEIN A	
27085	2	AA402495	Hs.77978	ESTs	
20487	2	N52322	Hs.19978	ESTs	
724	2	D83703	Hs.30729	Peroxisomal biogenesis factor 6	
4132	2	U27655	Hs.82294	Human RGP3 mRNA complete cds	
13375	2	AA449716	Hs.5723	ESTs	
13988	2	AA480045	Hs.7934	ESTs	
22306	2	R59906	Hs.100530	ESTs	
23167	2	T33164	Hs.12840	Homo sapiens germline mRNA sequence	
11320	2	AA213657	Hs.22222	ESTs	
24808	2	Z38888	Hs.25046	ESTs	
13163	2	AA437225	Hs.22410	ESTs	
1139	2	HG3227-	EST - HG3227-HT3404		
35572	2	AA401489	EST - RC_AA401489		
5964	2	Z49105	Hs.137591	H.sapiens HD21 mRNA	
30963	2	N59373	Hs.26812	ESTs	
16164	2	AA007509	Hs.75395	Human mRNA for TPRD complete cds	
2174	2	L42611	Hs.111758	KERATIN TYPE II CYTOSKELETAL 6D	
38958	2	AA609707	Hs.112751	ESTs	
37919	2	AA478162	Hs.104065	ESTs	
28905	2	D81123	Hs.57475	ESTs	
3745	2	U09117	Hs.80776	Human phospholipase c delta 1 mRNA complete cds	
19545	2	H37834	Hs.32699	ESTs	
8416	2	AA428531	EST - AA428531		
17569	2	AA128926	EST - RC_AA128926		
19354	2	H18929	Hs.121515	ESTs	
7598	2	AA174185	Hs.3354	Homo sapiens ezrin-radixin-moesin binding phosphoprotein-50 mRNA complete cds	
25385	2	AA059099	Hs.109727	ESTs	
14176	2	AA490620	Hs.11809	ESTs	
29487	2	H85120	Hs.80881	N-ACETYLACTOSAMINE SYNTHASE	
10197	2	R64199	Hs.50785	Homo sapiens vesicle trafficking protein sec22b mRNA complete cds	
19488	2	H27675	Hs.25604	ESTs	
10568	2	AA029703	Hs.38574	ESTs	
30799	2	N53143	Hs.84001	ESTs	
9638	2	L07592	Hs.105415	Human peroxisome proliferator activated receptor mRNA complete cds	
27195	2	AA411473	Hs.65311	ESTs	
17438	2	AA115508	Hs.2780	Jun D proto-oncogene	
24932	2	AFEX-	AFEX-HSAC07/X00351_M		
10944	2	AA125969	Hs.34769	ESTs Weakly similar to F3SG12.9 [C.elegans]	

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## FIGURE 6 (CONT.)

42324	2	T98199	Hs.142702	ESTs	
34756	2	AA287665	Hs.8245	ESTs	
12743	2	AA421050	Hs.24545	ESTs	
13676	2	AA459389	Hs.26350	Homo sapiens mRNA for tyrosyl sulfotransferase-2	
13009	2	AA430474	Hs.16466	ESTs	
7403	2	AA094921	Hs.79788	ESTs	
35669	2	AA404707	Hs.54855	ESTs	
17701	2	AA135941	Hs.71626	ESTs	
18713	2	F04886	Hs.21782	ESTs	
8314	2	AA410355	Hs.103081	ESTs Highly similar to RIBOSOMAL PROTEIN S6 KINASE [Homo sapiens]	
7990	2	AA291786	Hs.32822	ESTs Weakly similar to HYPOTHETICAL PROTEIN KIAA0168 [H.sapiens]	
42791	2	AFX-	AFX-HUMGAPDH/M33197_M		
6893	1	Z30643	Hs.123123	H.sapiens mRNA for chloride channel (putative) 2139bp	
35607	1	AA402267	Hs.133475	ESTs Weakly similar to zinc finger protein [H.sapiens]	
9468	1	H46074	Hs.31562	ESTs	
29469	1	H82929	EST - RC_H82929		
18692	1	F04444	Hs.6217	ESTs	
35205	1	AA398161	Hs.97602	ESTs	
22184	1	R53520	Hs.102755	ESTs	
28815	1	D59267	Hs.56782	ESTs	
17813	1	AA151480	Hs.91202	ESTs	
24655	1	Z39191	Hs.27282	ESTs Weakly similar to Lph17p [S.cerevisiae]	
15611	1	W51743	Hs.35096	ESTs	
15700	1	W73859	Hs.78061	Homo sapiens mesoderm-specific basic-helix-loop-helix protein (POD1) mRNA complete cds	
36770	1	AA435753	EST - RC_AA435753		
32400	1	R97176	Hs.110783	ESTs	
10802	1	AA069425	Hs.20573	ESTs	
17593	1	AA129856	EST - RC_AA129856		
20266	1	N32118	Hs.107365	ESTs Highly similar to THREONYL-TRNA SYNTHETASE CYTOPLASMIC [Homo sapiens]	
14447	1	AA609045	Hs.11759	ESTs	
12892	1	AA426521	Hs.18528	Homo sapiens mRNA for NA14 protein	
19738	1	H53059	Hs.15548	ESTs	
14471	1	AA609346	Hs.20102	ESTs	
5796	1	X55019	Hs.99975	Cholinergic receptor nicotinic delta polypeptide	
18441	1	AA232508	Hs.77480	ESTs	
10164	1	R54743	Hs.19400	ESTs Weakly similar to MITOTIC MAD2 PROTEIN [S.cerevisiae]	
8830	1	AB002319	Hs.8663	Human mRNA for KIAA0321 gene partial cds	
8682	1	AA477891	Hs.104476	ESTs	
35620	1	AA402493	Hs.10552	ESTs Highly similar to c-Jun leucine zipper interactive [M.musculus]	
35401	1	AA399593	Hs.97682	EST	

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## FIGURE 6 (CONT.)

10901	1	AA112307	Hs.25224	ESTs	
19546	1	H37901	Hs.32706	ESTs	
30292	1	N35978	Hs.82364	ESTs	
39087	1	AA620607	Hs.111591	ESTs	
37896	1	AA477463	Hs.77039	Ribosomal protein S28	
41552	1	R59352	Hs.101253	Human mRNA for KIAA0296 gene complete cds	
11467	1	AA234089	Hs.14593	ESTs	
8215	1	AA389673	Hs.84344	ESTs	
15505	1	W28366	Hs.7252	ESTs Weakly similar to No definition line found [C.elegans]	
9834	1	M92299	Hs.22554	Homo sapiens clone 24800 mRNA sequence	
9159	1	D31483	Hs.90062	Homeo box B5 (2.1 protein)	
42218	1	T86444	Hs.110095	Homo sapiens clone 23565 unknown mRNA partial cds	
15526	1	W28790	Hs.8124	ESTs	
17790	1	AA150182	Hs.42262	ESTs Weakly similar to HYPOTHETICAL 88.1 KD PROTEIN K02D10.1 IN CHROMOSOME III [C.elegans]	
9777	1	M57888	Hs.95946	GRANZYME H PRECURSOR	
15373	1	W26376	Hs.74563	THY-1 MEMBRANE GLYCOPROTEIN PRECURSOR	
12076	1	AA284362	Hs.6448	ESTs Weakly similar to No definition line found [C.elegans]	
15391	1	W26651	Hs.15961	ESTs	
12905	1	AA427537	Hs.32419	ESTs	
39820	1	H24085	Hs.25443	ESTs	
13109	1	AA435838	Hs.7985	ESTs	
24249	1	W73069	Hs.12600	ESTs	
16514	1	AA027946	Hs.44608	ESTs	
16767	1	AA048650	Hs.40342	ESTs	
15381	1	W26496	Hs.107725	ESTs Weakly similar to LIS-1 protein [H.sapiens]	
11690	1	AA252762	Hs.31235	ESTs	
22999	1	T16510	Hs.8624	ESTs	
24490	1	Z38153	Hs.26921	ESTs	
24368	1	W87280	Hs.124800	ESTs	
22565	1	R77631	Hs.29126	ESTs	
15358	1	W26105	Hs.8961	ESTs	
24186	1	W81319	Hs.37482	ESTs Highly similar to COATOMER ZETA SUBUNIT [Bos taurus]	
22272	1	R58922	Hs.26590	ESTs	
16434	1	AA024494	Hs.61199	ESTs	
22692	1	R88711	Hs.34183	ESTs	
38830	1	AA609189	Hs.116415	ESTs	
42547	1	W73946		EST - RC_W73946	
34865	1	AA302831	Hs.57732	Homo sapiens p38beta2 MAP kinase mRNA complete cds	
18445	1	AA232648	Hs.37068	ESTs	
18070	1	AA180352	Hs.72733	ESTs	

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PCT/US00/07044

**FIGURE 6 (CONT.)**

23923 1 T98407 Hs.17812 ESTs

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## FIGURE 7

Primary Key	fold downregulated of Tumor vs	Accession	Unigene CLUSTER	Unigene Descriptor
2348	>10	M15656	Hs.75592	Aldolase B fructose-bisphosphate
6463	>10	X90908	Hs.74126	H.sapiens mRNA for I-15P (I-BABP) protein
42139	>10	T73335	Hs.93194	APOLIPOPROTEIN A-I PRECURSOR
4544	>10	U48959	Hs.75950	H.sapiens mRNA for myosin light chain kinase
1583	>10	K02765	Hs.58512	COMPLEMENT C3 PRECURSOR
2426	>10	M19828	Hs.585	Apolipoprotein B (including Ag(x) antigen)
8859	>10	AB002351	Hs.10587	Human mRNA for KIAA0353 gene partial cds
24572	>10	Z38688	Hs.24192	ESTs
17810	>10	AA151402	Hs.46531	ESTs
7006	>10	Z70285	Hs.32966	H.sapiens mRNA for GCAP-II/uroguanylin precursor
1304	>10	HG4310-	EST - HG4310-HT4580	
5980	>10	X64559	Hs.65424	Tetranectin (plasminogen-binding protein)
41987	>10	T47089	Hs.121713	Cytochrome P450 subfamily XX1 (steroid 21-hydroxylase congenital adrenal hyperplasia)
24461	>10	W94427	Hs.3807	ESTs Weakly similar to SODIUM/POTASSIUM-TRANSPORTING ATPASE GAMMA CHAIN [Mus musculus]
2372	>10	M16594	Hs.89552	Glutathione S-transferase A2
6001	>10	X65727	Hs.89552	Glutathione S-transferase A2
1750	>10	L10955	Hs.89485	Carbonic anhydrase IV
15130	>10	U77643	Hs.95655	Homo sapiens K12 protein precursor mRNA complete cds
12467	>10	AA402856	Hs.28264	ESTs
41148	>10	R06984	EST - RC_R06984_s	
31652	>10	N73958	Hs.50404	Human chemokine (TECK) mRNA complete cds
23483	>10	T68873	Hs.143289	H.sapiens mRNA for metallothionein isoform 1R
4605	>10	U51010	EST - U51010	
28359	>10	AA609133	Hs.58115	ESTs
24066	>10	W32506	Hs.111676	ESTs Weakly similar to HEAT SHOCK 27 KD PROTEIN [H.sapiens]
33282	>10	W73194	Hs.80552	ESTs
12084	>10	AA284767	Hs.21910	ESTs
41473	>10	R48732	Hs.11006	ESTs
32568	>10	T29248	Hs.143113	Human pancreatic lipase related protein 2 (PLRP2) mRNA complete cds
6413	>10	X87159	Hs.37129	Sodium channel nonvoltage-gated 1 beta (Liddle syndrome)
20707	>10	N64436	Hs.20513	ESTs
27108	>10	AA404397	Hs.58414	ESTs Highly similar to ENDOTHELIAL ACTIN-BINDING PROTEIN [Homo sapiens]
12477	>10	AA403032	Hs.21701	ESTs
42059	>10	T61654	Hs.93194	APOLIPOPROTEIN A-I PRECURSOR
25468	>10	AA079072	Hs.1477	Insulin-like growth factor binding protein 6
28910	>10	AA303081	Hs.76293	ESTs

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## FIGURE 7 (CONT.)

16938	>10	AA059473	Hs.66783	ESTs	
41788	>10	T03735	Hs.26885	ESTs	
7754	>10	AA234634	Hs.76722	Human NF-IL6-beta protein mRNA complete cds	
6122	>10	X72012	Hs.75962	Endoglin (Osler-Rendu-Weber syndrome 1)	
2848	>10	M58286	Hs.159	TUMOR NECROSIS FACTOR RECEPTOR 1 PRECURSOR	
23013	>10	T16661	Hs.6725	ESTs	
19537	>10	H30270	Hs.32583	ESTs	
4584	>10	U50360	EST - U50360		
37410	>10	AA453652	Hs.99344	ESTs	
27969	>10	AA464594	Hs.63382	ESTs	
35497	>10	AA400606	Hs.144344	EST	
37013	>10	AA443690	Hs.136268	ESTs Highly similar to ZINC FINGER PROTEIN HF.12 [Homo sapiens]	
39247	>10	AA621553	Hs.112998	ESTs	
13471	>10	AA452598	Hs.109590	ESTs	
42110	>10	T68878	Hs.76688	Carboxylesterase 2 (liver)	
10965	>10	AA128997	Hs.18953	Human cGMP-specific phosphodiesterase (PDE9A2) mRNA complete cds	
4918	>10	U67733	Hs.3331	Human cGMP-stimulated 3'5'-cyclic nucleotide phosphodiesterase PDE2A3 (PDE2A) mRNA complete cds	
40737	>10	N54950	Hs.81454	Hs. sapiens KHK mRNA for ketohexokinase clone pHKHK3a	
30403	>10	N45300	Hs.110647	Meis1 (mouse) homolog	
11432	>10	AA233369	Hs.361	ESTs	
18784	>10	F09748	Hs.7974	ESTs	
40562	>10	N49281	EST - RC_N49281		
5773	>10	X54162	Hs.79386	64 KD AUTOANTIGEN D1	
35041	>10	AA350586	Hs.30862	ESTs	
20868	>10	N70068	Hs.7243	ESTs	
39729	>10	H11489	Hs.105805	ESTs	
27387	>10	AA426330	Hs.78264	ESTs	
39758	>10	H15814	Hs.80485	Human apM1 mRNA for GS3109 (novel adipose specific collagen-like factor) complete cds	
4319	>10	U37283	Hs.58882	Human microfibril-associated glycoprotein-2 MAGP-2 mRNA complete cds	
2866	>10	M59815	Hs.76682	Complement component 4A	
30332	>10	N39075	Hs.44934	EST	
41344	>10	R40189	Hs.6985	ESTs	
28271	>10	AA521200	Hs.48778	ESTs	
5834	>10	X57129	Hs.7644	HISTONE H1D	
19048	>10	H05464	Hs.100251	ESTs	
1429	>10	J02854	Hs.9615	Human 20-kDa myosin light chain (MLC-2) mRNA complete cds	
19491	>10	H27910	Hs.107384	ESTs	
29992	>10	N26386	Hs.33084	Solute carrier family 2 (facilitated glucose transporter) member 5	
2041	>10	L36033	Hs.77423	Stromal cell-derived factor 1	
22865	>10	R99909	Hs.36186	ESTs	

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## FIGURE 7 (CONT.)

11624	>10	AA243654	Hs.17998	ESTs	
12512	>10	AA405199	Hs.20733	ESTs	
41443	>10	R45577	Hs.10683	ESTs	
5055	>10	U77180	Hs.50002	Human mRNA for EBI1-ligand chemokine complete cds	
6038	>10	X65945	Hs.748	Basic fibroblast growth factor (bFGF) receptor (shorter form)	
42530	>10	W72859	Hs.74669	ESTs Weakly similar to SYNAPTOBREVIN 2 [H.sapiens]	
827	>10	D87433	Hs.84753	Human mRNA for KIAA0246 gene partial cds	
650	>10	D78014	Hs.74566	Human mRNA for dihydropyrimidinase related protein-3 complete cds	
37350	>10	AA452506	Hs.99289	EST	
37488	>10	AA455178	Hs.99397	ESTs	
36846	>10	AA431797	Hs.98763	EST	
38999	>10	AA609907		EST - RC_AA609907	
38191	>10	AA487695	Hs.17311	ESTs	
9944	>10	N57464	Hs.74670	Human mRNA for KIAA0146 gene partial cds	
8139	>10	AA341723	Hs.107374	ESTs	
41522	>10	R53968	Hs.75092	N-CHIMAERIN	
38090	>10	AA482603	Hs.111301	Matrix metalloproteinase 2 (gelatinase A 72kD gelatinase 72kD type IV collagenase)	
41175	>10	R09241		EST - RC_R09241	
36947	>10	AA437388	Hs.115726	ESTs	
4175	>10	U29853	Hs.76110	Pigment epithelium-derived factor	
35421	>10	AA396886	Hs.97669	EST	
4358	>10	U39487	Hs.250	Xanthine dehydrogenase	
35463	>10	AA400272	Hs.97758	EST	
7026	>10	Z80345	Hs.127610	Acyl-Coenzyme A dehydrogenase C-2 to C-3 short chain	
34625	>10	AA282238	Hs.118463	Homo sapiens clone 24519 unknown mRNA partial cds	
20179	>10	N24879	Hs.9693	ESTs	
36805	>10	AA435501	Hs.56874	ESTs Weakly similar to p20 protein [R.norvegicus]	
24447	>10	W93121	Hs.23841	Human mRNA for KIAA0355 gene complete cds	
10247	>10	R74386	Hs.108924	ESTs	
3618	>10	U02388	Hs.101	Leukotriene B4 omega hydroxylase (cytochrome P450 subfamily IVF)	
18730	>10	F08876	Hs.8008	ESTs	
22529	>10	R73075	Hs.29327	EST	
37520	>10	AA455960	Hs.99405	ESTs	
41122	>10	R05483	Hs.138500	ESTs	
4417	>10	U42031	Hs.7557	Human 54 kDa progesterone receptor-associated immunophilin FKBP54 mRNA partial cds	
9742	>10	M14777	Hs.89552	Glutathione S-transferase A2	
36194	>10	AA421142	Hs.104672	ESTs	
4445	>10	U43653	Hs.3261	Leptin (murine obesity homolog)	
19749	>10	H53728	Hs.36808	ESTs	
19793	>10	H56965	Hs.34564	ESTs	

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## FIGURE 7 (CONT.)

12713	>10	AA418398	Hs.17778	ESTs	
1464	>10	J03474	Hs.3157	SERUM AMYLOID A PROTEIN PRECURSOR	
16842	>10	AA055163	Hs.57975	Homo sapiens mRNA for cardiac calsequestrin complete cds	
34229	>10	AA234383	Hs.3576	ESTs	
35563	>10	AA401404	Hs.112087	ESTs	
16736	>10	AA045306	Hs.42996	ESTs	
33607	>10	W93497	Hs.59486	ESTs	
16146	>10	AA005236	Hs.60162	ESTs	
22666	>10	R85880	Hs.33455	ESTs	
22562	>10	R77493	Hs.29653	EST	
22985	>10	T16211	Hs.5326	Homo sapiens clone 23798 and 23825 mRNA sequence	
5248	>10	U86358	Hs.50404	Human chemokine (TECK) mRNA complete cds	
27608	>10	AA443800	Hs.43125	ESTs	
7510	>10	AA136353	Hs.38022	ESTs	
34883	>10	AA284920	Hs.13716	ESTs	
27633	>10	AA446659	Hs.2563	Tachykinin 2 (substance K neurokinin A neurokinin 2 neuromedin L neurokinin alpha neuropeptide K neuropeptide gamma)	
32485	>10	T16335	Hs.65325	EST	
38791	>10	AA609018	Hs.112629	ESTs	
32020	>10	N85796	Hs.55181	ESTs	
19986	>10	H89980	Hs.12112	ESTs Moderately similar to protein phosphatase 1 binding protein PTG [M.musculus]	
30748	>10	N52254	Hs.47438	ESTs	
8903	>10	AF002246	Hs.21226	Homo sapiens neural cell adhesion molecule (CALL) mRNA complete cds	
9659	>10	N75215	Hs.43148	ESTs	
38136	>10	AA486185	Hs.125176	ESTs	
19845	>10	H59987	Hs.35167	ESTs	
1127	>10	HG3117-	EST - HG3117-HT3293		
23637	>10	T85315	Hs.15903	ESTs	
16899	>10	AA043349	Hs.62630	ESTs	
36702	>10	AA434108	Hs.101393	ESTs Moderately similar to DNAX PROTEIN HOMOLOG 1 [Homo sapiens]	
28930	>10	F02702	Hs.141503	Small inducible cytokine A5 (RANTES)	
9226	>10	D62584	Hs.109439	ESTs Highly similar to OSTEOINDUCTIVE FACTOR PRECURSOR [Bos taurus]	
3357	>10	M89487	Hs.1915	PROSTATE-SPECIFIC MEMBRANE ANTIGEN	
36783	>10	AA435805	Hs.112065	EST	
4876	>10	U66061	Hs.2048	Protease serine 2 (trypsin 2)	
41149	>10	R08886	Hs.76487	ESTs	
22200	>10	R54179	Hs.26100	ESTs	
15925	>10	Y13492	Hs.78483	Homo sapiens mRNA for smoothelin	
10911	>10	AA113387	Hs.24305	ESTs	
3336	>10	M97675	Hs.1944	Human protein tyrosine kinase t-Ror1 (Ror1) mRNA complete cds	
31899	>10	N91897	Hs.50652	ESTs	

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## FIGURE 7 (CONT.)

10406	>10	AA007629	Hs.25478	ESTs	
17737	>10	AA142875	Hs.71719	ESTs	
38939	>10	AA609632	Hs.112737	EST	
16206	>10	AA010611	Hs.60418	EST	
32810	>10	W15376	Hs.122656	ESTs	
18210	>10	AA196306	Hs.86045	ESTs	
24054	>10	W15580	Hs.15342	ESTs	
23047	>10	T23457	Hs.7120	ESTs	
12944	>10	AA428258	Hs.8769	ESTs	
34172	>10	AA227469	Hs.139171	EST	
9317	>10	D87468	Hs.40888	Human mRNA for KIAA0278 gene partial cds	
19331	>10	H17865	Hs.23213	ESTs	
21035	>10	N92824	Hs.14898	ESTs	
34208	>10	AA233380	Hs.104249	EST	
5974	>10	X64072	Hs.83968	Integrin beta 2 (antigen CD18 (p95) lymphocyte function-associated antigen 1 macrophage antigen 1 (mac-1) beta subunit)	
5032	>10	U74382	Hs.90357	Homo sapiens telomeric repeat binding factor (TRF1) mRNA complete cds	
41941	>10	T32561	Hs.5476	ESTs	
34239	>10	AA235009	Hs.32246	ESTs	
32852	>10	W31906	Hs.116428	ESTs	
7682	>10	AA203527	Hs.18747	Homo sapiens ribonuclease P protein subunit p20 (RPP20) mRNA complete cds	
6432	>10	X89066	Hs.94413	Transient receptor potential channel 1	
37001	>10	AA443311	Hs.98998	ESTs	
4630	>10	U52101	Hs.9999	Human YMP mRNA complete cds	
19489	>10	H27852	Hs.28137	ESTs	
28483	>10	C14270	Hs.66357	ESTs	
19801	>10	H57357	Hs.18767	ESTs Weakly similar to unknown protein [H.sapiens]	
24672	>10	Z39300	Hs.124952	ESTs	
31153	>10	N63688		EST - RC_N63688	
40250	>10	H92451	Hs.110	Solute carrier family 3 (cystine dibasic and neutral amino acid transporters activator of cystine dibasic and neutral amino acid transport) member 1	
23028	>10	T17215	Hs.6952	ESTs	
28072	>10	AA480886	Hs.86693	ESTs	
11868	>10	AA262556	Hs.28802	ESTs Weakly similar to centaurin alpha [R.norvegicus]	
35359	>10	AA399061	Hs.112961	ESTs Moderately similar to PANCREATITIS-ASSOCIATED PROTEIN 1 PRECURSOR [H.sapiens]	
4285	>10	U35139	Hs.50130	Human NECDIN related protein mRNA complete cds	
4655	>10	U52969	Hs.80296	BRAIN SPECIFIC POLYPEPTIDE PEP-19	
26030	>10	AA235984	Hs.87469	ESTs	
2042	>10	L38051	Hs.1166	Thrombopoietin (myeloproliferative leukemia virus oncogene ligand megakaryocyte growth and development factor)	
25262	>10	AA043501	Hs.30250	Homo sapiens short form transcription factor C-MAF (c-maf) mRNA complete cds	
34821	>10	AA291983	Hs.144599	ESTs	
42405	>10	W44882	Hs.109896	ESTs	

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## FIGURE 7 (CONT.)

41348	>10	R40395	Hs.112125	Lecithin-cholesterol acyltransferase
14494	>10	AA609645	Hs.25632	ESTs Weakly similar to PNG gene [H.sapiens]
4453	>10	U43916	Hs.79368	Human epithelial membrane protein (CL-20) mRNA complete cds
42758	>10	Z41411	Hs.107040	ESTs
2098	>10	L39009	EST - L39009	
35637	>10	AA402933	Hs.29283	ESTs
16549	>10	AA029697	Hs.94854	ESTs
1220	>10	HG3733-	EST - HG3733-HT4003	
39934	>10	H52185	Hs.124994	ESTs
7735	>10	AA232121	Hs.109631	Human tyrosyl-tRNA synthetase mRNA complete cds
40392	>10	H99587	Hs.108880	ESTs
37170	>10	AA447779	Hs.99145	EST
18361	>10	AA223902	Hs.86899	ESTs
19366	>10	H19204	Hs.133466	ESTs
38429	>10	AA496965	Hs.109694	Glycophorin A
38021	>10	AA481059	Hs.105152	ESTs
5184	>10	U82169	Hs.87234	Human fizzled homolog (FZD3) mRNA complete cds
27863	>10	AA458923	Hs.70202	ESTs Weakly similar to F2392.4 [C.elegans]
37476	>10	AA455051	Hs.99386	EST
859	>10	D87468	Hs.40888	Human mRNA for KIAA0278 gene partial cds
27185	>10	AA410895	Hs.62348	ESTs
41010	>10	N80686	Hs.21639	Human APEG-1 mRNA complete cds
38241	>10	AA489076	Hs.105101	ESTs
22701	>10	R89477	Hs.34299	ESTs
12152	>10	AA291271	Hs.10886	ESTs Weakly similar to uroporphyrinogen III synthase UROIII [H.sapiens]
38913	>10	AA609531	Hs.112050	ESTs
34034	>10	AA192871	Hs.83760	Troponin I (skeletal fast)
37644	>10	AA459857	Hs.99503	EST
4173	>10	U29725	Hs.3080	Human BMK1 alpha kinase mRNA complete cds
16178	>10	AA008839	Hs.1632	CD27L RECEPTOR PRECURSOR
20527	>10	N54161	Hs.124044	ESTs
41918	>10	T25873	Hs.102243	ESTs
1525	>10	J04621	Hs.1501	Syndecan 2 (heparan sulfate proteoglycan 1 cell surface-associated fibroglycan)
19160	>10	H10208	Hs.30972	EST
16860	>10	AA055633	Hs.59152	ESTs Weakly similar to Natsu [M.musculus]
36927	>10	AA437259	Hs.104944	EST
1595	>10	K03207	Hs.103972	Salivary proline-rich protein
15574	>10	W38778	Hs.26216	ESTs
8885	>10	C00125	Hs.24332	ESTs Weakly similar to similar to deoxyribose-phosphate aldolase [C.elegans]
33995	>10	AA182845	Hs.139088	Homo sapiens FIP2 alternatively translated mRNA complete cds

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## FIGURE 7 (CONT.)

7949	>10	AA283620	Hs.34956	ESTs	
16607	>10	AA034918	Hs.85079	ESTs	
11670	>10	AA252191	Hs.25199	Homo sapiens PAC clone DJ130H16 from 22q12.1-qter	
7354	>10	AA092348	Hs.7868	ESTs	
4277	>10	U34879	Hs.85279	ESTRADIOL 17 BETA-DEHYDROGENASE 1	
23214	>10	T40895	Hs.11937	Human protein tyrosine phosphatase PTPCAAX1 (hPTPCAAX1) mRNA complete cds	
22209	>10	R54594	Hs.25209	ESTs	
36151	>10	AA419011	Hs.96744	ESTs	
23372	>10	T59537		EST - RC_T59537	
42136	>10	T72491	Hs.73849	Apolipoprotein C-III	
289	>10	D16480	Hs.75860	Hydroxyacyl-Coenzyme A dehydrogenase/3-ketoacyl-Coenzyme A thiolase/acyl-Coenzyme A hydratase (trifunctional protein) alpha subunit	
15974	>10	Z36531	Hs.2659	H.sapiens mRNA for fibrinogen-like protein (pT49 protein)	
41379	>10	R42233	Hs.106487	Homo sapiens mRNA for KIAA0673 protein partial cds	
34764	>10	AA287870	Hs.890	Lymphotoxin-beta	
24027	>10	W01875	Hs.5734	Homo sapiens mRNA for KIAA0679 protein partial cds	
36197	>10	AA421158	Hs.97514	ESTs	
37211	>10	AA448334		EST - RC_AA448334	
27684	>10	AA448625	Hs.57929	ESTs	
31790	>10	N80279	Hs.50891	ESTs	
24515	>10	Z38289	Hs.12701	ESTs	
18652	>10	F03111	Hs.22505	ESTs	
16635	>10	AA037433	Hs.46987	ESTs	
37815	>10	AA465952	Hs.97899	ESTs	
6364	>10	X83857	Hs.495	Prostaglandin E receptor 3 (subtype EP3) (alternative products)	
9034	>10	C01833	Hs.29759	ESTs Weakly similar to IIII ALU SUBFAMILY SX WARNING ENTRY IIII (H.sapiens)	
16469	>10	AA025728	Hs.61307	ESTs	
27034	>10	AA400102	Hs.49051	ESTs	
42746	>10	Z40646	Hs.124953	ESTs	
35368	>10	AA399269	Hs.15250	Homo sapiens DBI-related protein mRNA complete cds	
34805	>10	AA291522	Hs.97250	EST	
19983	>10	H89355	Hs.6598	ESTs	
31126	>10	N63444	Hs.47566	ESTs	
22616	>10	R81949	Hs.124964	ESTs	
12246	>10	AA348198	Hs.14829	Homo sapiens mRNA for GABA-BR1a (hGB1a) receptor	
8777	>10	AA495865	Hs.7974	ESTs	
13486	>10	AA453034	Hs.21041	ESTs Highly similar to FIBROPELIN C PRECURSOR [Strongylocentrotus purpuratus]	
25512	>10	AA085721	Hs.95511	ESTs	
29073	>10	F12567		EST - RC_F12567	
5541	>10	X07203	Hs.89751	CD20 RECEPTOR	
41699	>10	R82942	Hs.107755	ESTs Weakly similar to GLYCEROPHOSPHORYL DIESTER PHOSPHODIESTERASE [E.coli]	

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## FIGURE 7 (CONT.)

32343	>10	R80965	Hs.125052	ESTs	
38335	>10	AA490916	Hs.112157	ESTs	
41729	>10	R92458	Hs.89554	Hemoglobin gamma-G	
36707	>10	AA434246	Hs.98802	EST	
28491	>10	C14784	Hs.12382	ESTs	
41702	>10	R86970	Hs.123363	ESTs	
32246	>10	R52163	Hs.144526	ESTs	
17314	>10	AA086487	Hs.107365	ESTs Highly similar to THREONYL-TRNA SYNTHETASE CYTOPLASMIC [Homo sapiens]	
30325	>10	N38967	Hs.44904	EST	
19823	>10	H58692	Hs.9520	ESTs Highly similar to FORMYL-TETRAHYDROFOLATE DEHYDROGENASE [Rattus norvegicus]	
42153	>10	T77729	Hs.89890	Pyruvate carboxylase	
19321	>10	H17511	Hs.24963	ESTs	
27110	>10	AA404494	Hs.84112	CTP synthetase	
28831	>10	D59722	Hs.92924	ESTs	
6333	>10	X82494	Hs.2653	Fibulin 2	
37679	>10	AA460661	Hs.99562	ESTs	
40829	>10	N64344	Hs.78362	Human clone 23839 mRNA sequence	
19132	>10	H08343	Hs.27261	ESTs	
19353	>10	H18706	Hs.31604	ESTs	
10935	>10	AA121534	Hs.6923	ESTs Highly similar to TUBULIN BETA-5 CHAIN [Gallus gallus]	
11621	>10	AA243574	Hs.14691	ESTs	
38538	>10	AA521370	Hs.104423	ESTs	
10095	>10	R22139	Hs.30343	ESTs	
30014	>10	N26740	Hs.42771	ESTs	
4464	>10	U44429	Hs.16611	Human D53 (nD53) mRNA partial cds	
3650	>10	U03877	Hs.76224	Human extracellular protein (S1-5) mRNA complete cds	
36377	>10	AA426056	Hs.98450	ESTs	
20437	>10	N50550	Hs.24587	Homo sapiens mRNA for Efs1 complete cds	
1576	>10	K02100	Hs.117050	ORNITHINE CARBAMOYLTRANSFERASE PRECURSOR	
42078	>10	T64891	Hs.144323	ESTs	
27257	>10	AA418001	Hs.46146	ESTs Weakly similar to mitogen-activated kinase kinase kinase 5 [H.sapiens]	
30582	>10	N49848	Hs.46574	EST	
3631	>10	U03090	Hs.290	Homo sapiens Ca2+-dependent phospholipase A2 mRNA complete cds	
19026	>10	H04768	Hs.30484	ESTs	
4752	>10	U59632	Hs.3847	Glycoprotein Ib (platelet) beta polypeptide	
3766	>10	U09579	Hs.74984	CYCLIN-DEPENDENT KINASE INHIBITOR 1	
1437	>10	J02923	Hs.76506	Lymphocyte cytosolic protein 1 (L-plastin)	
33905	>10	AFFX-		AFFX-TrpX-5	
4310	>10	U37055	Hs.76034	Macrophage stimulating 1 (hepatocyte growth factor-like)	
26923	>10	AA342302	Hs.55036	ESTs	



## FIGURE 7 (CONT.)

5520	X06256	Hs.119218	Integrin alpha 5 (fibronectin receptor alpha polypeptide)
37571	AA457409	Hs.99458	EST
38800	AA609052	Hs.112636	EST
27952	AA463700	Hs.47042	Homo sapiens CD39L3 (CD39L3) mRNA complete cds
27621	AA446242	Hs.58589	ESTs
38784	AA608988	Hs.2051	Testis specific protein Y-linked
291	D16532	Hs.73729	Very low density lipoprotein receptor
18014	AA173168	Hs.57672	ESTs Weakly similar to myosin heavy chain [C.elegans]
16720	AA044732	Hs.77208	ESTs
25336	AA053405	Hs.101404	ESTs
2547	M25809	Hs.1009	ATPase H+ transporting lysosomal (vacuolar proton pump) beta polypeptide 56/58kD isoform 1
39953	H56010	Hs.108144	ESTs Weakly similar to IIII ALU SUBFAMILY J WARNING ENTRY IIII [H.sapiens]
13777	AA463504	Hs.6052	ESTs
13419	AA450336	Hs.22269	ESTs
1403	J00123	Hs.93557	PROENKEPHALIN A PRECURSOR
42373	W35362	Hs.103012	ESTs
21520	R28267	Hs.24258	ESTs
9796	M63509	Hs.73974	Glutathione S-transferase M2 (muscle)
35950	AA404271	Hs.22631	Human glutamate receptor (GLUR5) mRNA complete cds
42501	W69586	Hs.103156	ESTs
33812	Z41239	Hs.106960	ESTs
42473	W63731	Hs.122531	ESTs
25195	AA033790	Hs.75736	Apolipoprotein D
28607	C21481	Hs.84630	ESTs Moderately similar to IIII ALU SUBFAMILY SQ WARNING ENTRY IIII [H.sapiens]
3712	U07620	Hs.89661	Human MAP kinase mRNA complete cds
6214	X77307	Hs.2507	5-HYDROXYTRYPTAMINE 2B RECEPTOR
23575	T80833	Hs.14794	ESTs
31775	N79765	Hs.50847	ESTs
5206	U82979	Hs.67846	Human clone HM18 monocyte inhibitory receptor precursor mRNA complete cds
22769	R94521	Hs.124693	ESTs
9377	H12674	Hs.9396	ESTs
29268	H61046	Hs.70405	EST Moderately similar to IIII ALU SUBFAMILY J WARNING ENTRY IIII [H.sapiens]
11061	AA147537	Hs.4811	ESTs
41960	T33511	Hs.4844	ESTs
29416	H77734	Hs.36702	Homo sapiens roundabout 1 (robot) mRNA complete cds
38248	AA489218	Hs.105229	ESTs
37256	AA449424	Hs.98428	ESTs
21911	R43980	Hs.26320	ESTs
23184	T34622	Hs.8108	ESTs Weakly similar to HYPOTHETICAL 35.8 KD PROTEIN IN PRP16-SRP40 INTERGENIC REGION [S.cerevisiae]
16225	AA011305	Hs.10029	Cathepsin C

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## FIGURE 7 (CONT.)

27766	>10	AA453656	Hs.88417	ESTs	
16071	>10	AA001426	Hs.40863	ESTs	
17343	>10	AA100152	Hs.5921	ESTs	
10643	>10	AA040154	Hs.32478	ESTs	
29335	>10	H68239	Hs.39122	ESTs	
34966	>10	AA344856	Hs.1285	Complement component 8 gamma polypeptide	
26303	>10	AA255483	Hs.88042	EST	
1030	>10	HG2416-	EST - HG2416-HT2512	EST	
28370	>10	AA609559	Hs.38550	ESTs Moderately similar to alfa subunit [H.sapiens]	
29303	>10	H65881	Hs.38427	ESTs	
21076	>10	N99976	Hs.8016	ESTs	
27100	>10	AA404231	EST - RC_AA404231	EST	
11329	>10	AA216589	Hs.28462	ESTs	
4402	>10	U41518	Hs.74602	AQUAPORIN-CHIP	
11050	>10	AA142919	Hs.5598	ESTs	
22844	>10	R98947	EST - RC_R98947	EST	
31581	>10	N71371	Hs.39938	ESTs	
7253	>10	AA074407	Hs.139119	ESTs	
20423	>10	N49308	Hs.104938	ESTs	
39264	>10	AA621750	EST - RC_AA621750	EST	
36415	>10	AA426598	Hs.24897	Homo sapiens chromosome 21q22.1 anonymous mRNA sequence	
16575	>10	AA031948	Hs.57548	ESTs	
37505	>10	AA455659	Hs.103233	ESTs	
28264	>10	AA521080	Hs.46765	ESTs	
23886	>10	T95325	Hs.18545	ESTs	
11781	>10	AA256485	Hs.33413	ESTs	
25603	>10	AA114250	Hs.48924	Homo sapiens mRNA for KIAA0512 protein complete cds	
9003	>10	C00808	Hs.107882	ESTs	
5632	>10	X15357	EST - X15357	EST	
7680	>10	AA206946	Hs.8059	ESTs	
22783	>10	R95689	Hs.35437	ESTs	
20852	>10	N69540	Hs.17713	ESTs	
16795	>10	AA047896	Hs.49169	ESTs	
37558	>10	AA456975	Hs.75736	Apolipoprotein D	
35957	>10	AA412537	Hs.98149	EST	
42129	>10	T71561	Hs.84824	ESTs	
34585	>10	AA281002	Hs.40735	ESTs	
33690	>10	Z38607	Hs.62248	ESTs	
8904	>10	AF002256	Hs.86180	Homo sapiens killer cell receptor (KIR103) mRNA allele ASD1 complete cds	
2689	>10	M32373	Hs.1256	Arylsulfatase B	

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## FIGURE 7 (CONT.)

40909	>10	N69084	Hs.49608	ESTs	
22377	>10	R63090	Hs.28391	ESTs	
21208	>10	R07651	Hs.20023	EST	Homo sapiens mRNA for zinc finger protein FPM315 complete cds
27304	>10	AA421783	Hs.58808	BASIC TRANSCRIPTION FACTOR 62 KD SUBUNIT	
3307	>10	M95809	Hs.89578	ESTs	
25370	>10	AA057556	Hs.28478	ESTs	
41423	>10	R44717	Hs.22917	ESTs	
2570	>10	M27160	Hs.2053	Tyrosinase (oculocutaneous albinism IA)	
14557	>10	AA620965	Hs.108300	ESTs Highly similar to ADENYLOSUCCINATE SYNTHETASE MUSCLE ISOZYME [Mus musculus]	
7023	>10	Z78291		EST - Z78291	
31051	>10	N62896	Hs.48607	EST	
39200	>10	AA621246	Hs.112956	EST	
24712	>10	Z39652	Hs.27457	ESTs	
23296	>10	T52497	Hs.9444	ESTs Moderately similar to IIII ALU CLASS A WARNING ENTRY IIII [H.sapiens]	
12826	>10	AA424806	Hs.134646	ESTs	
2199	>10	L49169	Hs.75678	Human GOS3 mRNA complete cds	
27226	>10	AA416767	Hs.43498	ESTs	
7135	>10	AA028976	Hs.8175	ESTs	
17102	>10	AA074955		EST - RC_AA074955	
38942	>10	AA609846	Hs.94970	Human mRNA for KIAA0306 gene partial cds	
29288	>10	H64973	Hs.38336	ESTs	
34336	>10	AA250843	Hs.54434	Interferon regulatory factor 5	
30816	>10	N53566	Hs.47681	ESTs	
16739	>10	AA045461	Hs.65093	ESTs	
42317	>10	T97599	Hs.113025	ESTs	
2228	>10	L77563		EST - L77563	
30862	>10	N55171	Hs.47927	ESTs	
35954	>10	AA412528	Hs.97951	ESTs	
36403	>10	AA426383	Hs.98467	ESTs	
36949	>10	AA441812	Hs.98959	ESTs	
41828	>10	R70212	Hs.79630	Immunoglobulin-associated alpha	
39175	>10	AA621076	Hs.111996	ESTs	
37657	>10	AA460147		EST - RC_AA460147	
36279	>10	AA424242	Hs.98397	ESTs Weakly similar to precursor of major fibrous sheath protein [M.musculus]	
6834	>10	Z18954	Hs.2980	S100 calcium-binding protein A5 (formerly S100D)	
40562	>10	N33212	Hs.107197	ESTs	
13770	>10	AA463272	Hs.22636	ESTs	
5101	>10	U79249	Hs.78362	Human clone 23839 mRNA sequence	
3355	>10	M99438	Hs.31305	Human transducin-like enhancer protein (TLE3) mRNA complete cds	
8476	>10	AA442119	Hs.29790	ESTs	

## FIGURE 7 (CONT.)

34231	>10	AA234527	Hs.75772	Glucocorticoid receptor
42046	>10	T59148	Hs.50966	Carbamoyl-phosphate synthetase 1 mitochondrial
23913	>10	T96123	Hs.17749	ESTs
37333	>10	AA452158	Hs.75122	TRANSFORMING PROTEIN RHOB
27946	>10	AA463434	Hs.42658	ESTs
34407	>10	AA255523	EST - RC_AA255523	
16542	>10	AA029428	Hs.81555	ESTs
6248	>10	X78712	Hs.98008	Glycerol kinase 2 (testis specific)
8227	>10	AA393666	Hs.75709	Mannose-6-phosphate receptor (cation dependent)
3507	>10	S78774	EST - S78774	
40907	>10	N68830	Hs.25717	ESTs
33340	>10	W79698	Hs.58550	ESTs
19079	>10	H06371	Hs.20945	ESTs
3992	>10	U19713	Hs.76364	Allograft inflammatory factor 1
36059	>10	AA417063	Hs.98189	ESTs
37634	>10	AA459662	Hs.99489	EST
41581	>10	R62313	Hs.126270	ESTs Weakly similar to RTP60 [R.norvegicus]
38734	>10	AA608792	Hs.112591	EST
37636	>10	AA470135	Hs.112238	ESTs
21303	>10	R11157	Hs.12610	ESTs
20125	>10	N22006	Hs.6202	ESTs
35516	>10	AA400795	Hs.97450	ESTs
26771	>10	AA284067	Hs.89267	EST
33558	>10	W90735	Hs.59332	EST
2830	>10	M57399	Hs.44	Pleiotrophin (heparin binding growth factor 8 neurite growth-promoting factor 1)
42625	>10	W88428	Hs.110128	ESTs
26152	>10	AA250845	Hs.87762	ESTs
31988	>10	N64581	Hs.55082	ESTs
17763	>10	AA148213	Hs.71873	ESTs Highly similar to 65 KD YES-ASSOCIATED PROTEIN [Gallus gallus]
21959	>10	R44949	Hs.22906	ESTs
10000	>10	N79674	Hs.7915	ESTs
30698	>10	N51105	Hs.111223	ESTs
17629	>10	AA131919	Hs.89009	ESTs
36260	>10	AA423970	Hs.98378	ESTs
285	>10	D16227	Hs.3618	Hippocalcin-like 1
26123	>10	AA243598	Hs.20887	ESTs
34635	>10	AA279391	Hs.104425	EST
29100	>10	H01428	Hs.92350	ESTs
24122	>10	W46947	Hs.4168	ESTs
19894	>10	H65942	Hs.36030	ESTs

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## FIGURE 7 (CONT.)

22987	>10	T16258	Hs.25420	ESTs	
5985	>10	X64728	Hs.34514	H.sapiens CHML mRNA	
42461	>10	W60008	Hs.89717	Human preprocarboxypeptidase A2 (proCPA2) mRNA complete cds	
5422	>10	X00588	Hs.77432	Epidermal growth factor receptor	
16603	>10	AA034356	Hs.144627	ESTs	
33389	>10	W81607	Hs.58663	EST	
6931	>10	Z46788	Hs.3232	H.sapiens mRNA for cyclin II	
19324	>10	H17618	Hs.28180	ESTs	
32166	>10	R41836	Hs.9657	ESTs	
39967	>10	H58415	Hs.102160	EST	
17958	>10	AA186917	Hs.72639	ESTs	
38569	>10	AA598437	Hs.29385	ESTs Highly similar to MITOCHONDRIAL RESPIRATORY CHAIN COMPLEXES ASSEMBLY PROTEIN RCA1 [Saccharomyces cerevisiae]	
1006	>10	HG2280-		EST - HG2280-HT2349	
23552	>10	T79638	Hs.105618	ESTs	
38228	>10	AA488997	Hs.137530	ESTs	
1066	>10	HG2705-		EST - HG2705-HT2801	
23815	>10	T91283		EST - RC_T91283	
4699	>10	U57099	Hs.21639	Human APEG-1 mRNA complete cds	
31306	>10	N66796	Hs.144212	ESTs	
12389	>10	AA399633	Hs.24872	ESTs	
34539	>10	AA279862	Hs.142462	ESTs Moderately similar to snRNP protein B [H.sapiens]	
20358	>10	N38584	Hs.17404	ESTs	
28070	>10	AA236868	Hs.87564	ESTs	
38210	>10	AA488659	Hs.105686	ESTs	
26025	>10	AA235874	Hs.88888	PUTATIVE DNA BINDING PROTEIN A20	
4978	>10	U71207	Hs.29279	Homo sapiens clone 24534 eyes absent homolog (Eab1) mRNA partial cds	
4935	>10	U68162	Hs.84171	THROMBOPOIETIN RECEPTOR PRECURSOR	
3501	>10	S78467		EST - S78467	
14281	>10	AA505136	Hs.12420	ESTs	
31859	>10	N90688	Hs.54643	EST	
41104	>10	R01398		EST - RC_R01398	
5293	>10	U89995	Hs.95206	Human DNA binding protein FKHL15 (FKHL15) mRNA complete cds	
3543	>10	S81957		EST - S81957	
27615	>10	AA443958	Hs.90960	ESTs	
7152	>10	AA036753	Hs.78494	Homo sapiens mRNA for KIAA0525 protein partial cds	
16197	>10	AA010328	Hs.39379	ESTs	
20176	>10	N24772	Hs.30213	Homo sapiens putative transmembrane protein (CLN5) mRNA complete cds	
33586	>10	W93015	Hs.73166	Treacher Collins syndrome susceptibility protein	
27265	>10	AA418392	Hs.46784	ESTs	
12453	>10	AA402000	Hs.20415	ESTs Weakly similar to GS3786 [H.sapiens]	

## FIGURE 7 (CONT.)

36302	>10	AA424652	Hs.124985	ESTs	
23192	>10	T40448	Hs.8204	ESTs	
17423	>10	AA114071	Hs.26270	ESTs	
23464	>10	T67026	Hs.13019	ESTs	
42762	>10	Z41697	Hs.106296	ESTs	
32628	>10	T56470	Hs.119190	Chromogranin A (parathyroid secretory protein 1)	
12805	>10	AA424331	Hs.29640	ESTs	
25379	>10	AA058893	Hs.111841	Human adenyl cyclase-associated protein homolog CAP2 (CAP2) mRNA complete cds	
39318	>10	C20617	Hs.108945	Homo sapiens mRNA for KIA0515 protein partial cds	
29899	>10	H97938	Hs.75772	Glucocorticoid receptor	
17907	>10	AA160530	Hs.72447	ESTs	
35819	>10	AA411011	Hs.8038	ESTs	
36838	>10	AA436163	Hs.95851	Homo sapiens Pig12 (PIG12) mRNA complete cds	
29611	>10	H94043	Hs.41949	ESTs	
19650	>10	H46167	Hs.31542	ESTs	
33221	>10	W70305	Hs.64859	ESTs	
18940	>10	F10265	Hs.13287	ESTs	
2580	>10	M27533		EST - M27533	
7274	>10	AA082171	Hs.8261	ESTs	
19524	>10	H29566	Hs.83466	Homo sapiens clone 23579 mRNA sequence	
40571	>10	N33558	Hs.103102	ESTs Weakly similar to WWP2 [H.sapiens]	
31178	>10	N64191	Hs.46584	ESTs	
29894	>10	N23009	Hs.43296	ESTs	
22201	>10	R54416	Hs.140932	ESTs	
26719	>10	AA282583	Hs.98617	ESTs	
32493	>10	T16497	Hs.65339	EST	
37179	>10	AA448004	Hs.99150	ESTs	
17980	>10	AA169173	Hs.72754	ESTs	
21834	>10	R44449	Hs.48778	ESTs	
36792	>10	AA435848		EST - RC_AA435848	
34056	>10	AA184851	Hs.110575	ESTs	
39102	>10	AA620674	Hs.112882	EST	
26283	>10	AA253217	Hs.41271	ESTs	
23989	>10	T98529	Hs.18398	ESTs	
32456	>10	T15829	Hs.65264	ESTs	
15440	>10	W27301	Hs.111652	ESTs Moderately similar to PUTATIVE SERINE/THREONINE-PROTEIN KINASE PKWA [Thermomonospora curvata]	
19004	>10	H03299	Hs.30390	EST	
27839	>10	AA456309	Hs.58831	ESTs	
18848	>10	F10338	Hs.106309	ESTs Moderately similar to FOG [M.musculus]	
13112	>10	AA435896	Hs.18397	ESTs	

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## FIGURE 7 (CONT.)

1850	>10	L17325	Hs.278	Human pre-T/NK cell associated protein (1D12A2) mRNA complete cds
9101	>10	C17938	Hs.25536	ESTs
2807	>10	M55210	Hs.87428	Laminin gamma 1 (formerly LAMB2)
3393	>10	S57153	Hs.91797	Retinoblastoma-binding protein 1 (alternative products)
23142	>10	T26444	Hs.101248	ESTs
5367	>10	U95019	Hs.30941	Myasthenic syndrome antigen B [human fetal brain mRNA 3477 nt]
32205	>10	R44234	Hs.75169	ESTs
28515	>10	AA282972	Hs.87298	ESTs
15332	>10	W24127	Hs.16003	ESTs Weakly similar to keratin 8 type II cytoskeletal embryonic [M.musculus]
34193	>10	AA232251	Hs.128630	ESTs
8392	>10	X85753	Hs.25283	CELL DIVISION PROTEIN KINASE 8
33784	>10	Z40689	Hs.65973	ESTs
33474	>10	W87484	Hs.50429	ESTs
34964	>10	AA344854	Hs.96837	ESTs
14584	>10	AA621414	Hs.110903	Homo sapiens transmembrane protein mRNA complete cds
22640	>10	R83664	Hs.33416	EST
4339	>10	U38372	EST - U38372	
37557	>10	AA456966	Hs.41548	Human MHC Class I region proline rich protein mRNA complete cds
4937	>10	U68385	Hs.117313	Human Meis1-related protein 2 (MRG2) mRNA partial cds
30795	>10	N53043	Hs.47806	ESTs
30966	>10	N59432	Hs.48382	EST
33991	>10	AA181935	Hs.104059	EST
2265	>10	M11591	EST - M11591	
24315	>10	W84413	Hs.23017	ESTs
38752	>10	AA608852	Hs.112603	EST
5119	>10	U79271	Hs.7571	Human clones 23920 and 23921 mRNA sequence
15037	>10	U44798	Hs.93502	Human U1-snRNP binding protein homolog mRNA complete cds
37045	>10	AA446000	Hs.99043	ESTs
37627	>10	AA459392	Hs.105042	ESTs
21935	>10	R44477	Hs.22646	ESTs
18669	>10	F03889	Hs.27278	ESTs Highly similar to PEPTIDYL-PROLYL CIS-TRANS ISOMERASE A [Bos taurus Sus scrofa]
22737	>10	R92512	EST - RC_R92512_s	
30727	>10	N51987	Hs.47390	EST
16086	>10	AA001879	Hs.59890	EST
23293	>10	T52201	Hs.9410	ESTs
5294	>10	U90065	Hs.79351	Human two P-domain K+ channel TWIK-1 mRNA complete cds
17769	>10	AA148923	Hs.93675	ESTs
25549	>10	AA101056	EST - RC_AA101056	
84	>10	AF001359	EST - AF001359_f	
4856	>10	U65093	Human msg1-related gene 1 (mrg1) mRNA complete cds	

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## FIGURE 7 (CONT.)

7697	AA214730	Hs.107256	ESTs	
36296	AA424535	Hs.98416	ESTs	
17490	AA125781	Hs.57489	ESTs	
36976	AA42779	Hs.98983	ESTs	
10425	AA010619	Hs.16446	ESTs	
41196	R11654	Hs.20526	ESTs	
42285	T94409	EST - RC_T94409	EST	
33185	W69435	Hs.58009	EST	
13974	AA79299	Hs.21107	ESTs	
19868	H61560	EST - RC_H61560	EST	
1378	HG831-	EST - HG831-HT831	EST	
621	D63813	Hs.26886	Human mRNA for rod photoreceptor protein complete cds	
5346	U92459	Hs.86204	Human metabotropic glutamate receptor 8 mRNA complete cds	
6029	X66533	Hs.77890	GUANYLATE CYCLASE SOLUBLE BETA-1 CHAIN	
22196	R53972	Hs.26026	ESTs	
24609	Z38900	Hs.26815	ESTs	
37196	AA448226	EST - RC_AA448226	EST	
26151	AA250636	Hs.108509	ESTs	
5938	X62535	Hs.74044	Diacylglycerol kinase alpha (80kD)	
16373	AA019603	Hs.80992	ESTs	
28356	AA609080	Hs.41585	ESTs	
20070	H98854	Hs.20423	ESTs	
17717	AA136541	Hs.71647	EST	
20069	H98768	Hs.13121	ESTs	
40985	N74604	Hs.124694	ESTs	
10194	R63545	Hs.11553	ESTs Weakly similar to putative type III alcohol dehydrogenase [D.melanogaster]	
40200	H87229	Hs.82963	Gonadotropin-releasing hormone (leutinizing-releasing hormone)	
34903	AA347417	Hs.98869	EST	
23543	T79203	Hs.14480	ESTs	
12770	AA421778	Hs.8861	ESTs	
25085	AA017518	Hs.115241	Homo sapiens G protein beta 5 subunit mRNA complete cds	
37746	AA463627	Hs.99598	ESTs	
2370	M16505	Hs.79876	STERYL-SULFATASE PRECURSOR	
31244	N66062	Hs.49112	EST	
31716	N75507	Hs.50628	ESTs Weakly similar to CLATHRIN COAT ASSEMBLY PROTEIN AP17 [Rattus norvegicus]	
28306	AA598959	Hs.59163	ESTs	
2220	L76887	Hs.83070	Homo sapiens Grib14 mRNA complete cds	
12404	AA400292	Hs.23786	ESTs	
41050	N92882	Hs.109494	ESTs Weakly similar to putative progesterone binding protein [H.sapiens]	
2407	M18737	Hs.90708	GRANZYME A PRECURSOR	

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## FIGURE 7 (CONT.)

23462	>10	T66948	Hs.12992	ESTs	
18614	>10	F02418	Hs.107614	ESTs	
40553	>10	N32060	Hs.104010	Homo sapiens CAG-1s1 7 mRNA complete cds	
27826	>10	AA455949	Hs.61232	ESTs	
207	>10	D12763	Hs.66	Suppression of tumorigenicity 2	
41064	>10	N93608	Hs.102923	EST	
10845	>10	AA084405	Hs.106313	ESTs Weakly similar to P24 protein [M.musculus]	
21813	10	R42039	Hs.23084	ESTs	
18463	10	AA233151	Hs.81796	ESTs	
17507	10	AA126419	Hs.74876	ESTs	
23957	10	T97487	Hs.18070	ESTs	
13317	10	AA448212	Hs.38095	ESTs	
29550	10	H90133	Hs.41352	ESTs	
39066	10	AA620411	Hs.141503	Small inducible cytotoxic A5 (RANTES)	
26620	10	AA280413	Hs.85843	Spleen focus forming virus (SFFV) proviral integration oncogene sp1	
37675	10	AA460377	Hs.99816	ESTs	
31437	10	N68821	Hs.49573	ESTs	
32657	10	T66867	Hs.76889	ESTs	
34952	10	AA342828	Hs.73734	PLATELET GLYCOPROTEIN V PRECURSOR	
26475	10	AA262264	Hs.87640	ESTs	
41827	10	T15445	Hs.99491	H.sapiens mRNA for F2553.3 kinase like protein from C.elegans	
20073	10	H98985	Hs.111911	ESTs	
42336	10	T99713	Hs.139333	ESTs	
26412	10	AA256224	Hs.86646	ESTs	
21352	10	R15880	Hs.21745	ESTs	
22583	10	R79239	Hs.29855	EST	
34020	10	AA191543	Hs.144302	EST	
25913	10	AA181106	EST - RC_AA181106	EST	
82	10	AF000959	Hs.110903	Homo sapiens transmembrane protein mRNA complete cds	
37531	10	AA455140	Hs.99235	ESTs	
13314	10	AA448169	Hs.6728	ESTs	
31430	10	N68610	Hs.46633	EST - RC_N68610	
30570	10	N49537	Hs.46633	EST	
7302	10	AA089688	Hs.103668	EST	
27732	10	AA452167	Hs.55778	ESTs	
22533	10	R73468	Hs.140996	ESTs	
31079	10	N62969	Hs.46682	EST	
35470	10	AA400393	Hs.97803	EST Weakly similar to precursor polypeptide [H.sapiens]	
37102	10	AA446869	Hs.119316	ESTs	
203	10	D12620	Hs.106242	CYTOCHROME P450 1VF3	

## FIGURE 7 (CONT.)

11427	10	AA233277	Hs.74947	ESTs	
24159	10	W57862	Hs.21289	ESTs	
17870	10	AA157772	Hs.72185	ESTs	
5302	10	U90543	Hs.79041	Human butyrophilin (BTF1) mRNA complete cds	
27256	10	AA417988	Hs.62781	ESTs	
2219	10	L76670	Hs.109610	Homo sapiens nkat7 mRNA complete cds	
30858	10	N55081	Hs.47915	EST	
8870	10	AB002367	Hs.21355	Human mRNA for KIAA0369 gene complete cds	
40870	10	N67262	Hs.358	Zinc finger protein 135 (clone pHZ-17)	
11811	10	AA258130	Hs.11530	ESTs	
33254	10	W72633	Hs.58187	ESTs	
17162	10	AA079094		EST - RC_AA079094	
24392	10	W85568	Hs.58589	Homo sapiens glycogenin-2 gamma (glycogenin-2) mRNA complete cds	
27456	10	AA430539	Hs.57760	ESTs	
25419	10	AA069386		EST - RC_AA069386	
7100	10	AA012885	Hs.60548	ESTs	
31586	10	N71571	Hs.50050	ESTs	
29995	10	N26401	Hs.43802	EST	
31973	10	N93875	Hs.55015	EST	
36159	10	AA419279	Hs.82813	Colony-stimulating factor 1 (M-CSF)	
12419	10	AA400888	Hs.7159	ESTs	
27076	10	AA401630	Hs.62592	ESTs	
28251	10	AA504512	Hs.76852	ESTs Weakly similar to ZK792.1 [C.elegans]	
4219	10	U32324	Hs.64310	Human Interleukin-11 receptor alpha chain mRNA complete cds	
27991	10	AA465650	Hs.87306	ESTs	
37702	10	AA461119	Hs.99539	ESTs	
25251	10	AA040792	Hs.54421	Bradykinin receptor B2	
27064	10	AA401253	Hs.87677	ESTs	
37592	10	AA456668	Hs.95696	ESTs	
39619	9	F10640	Hs.12354	ESTs	
31053	9	N62724	Hs.48614	EST	
33338	9	W79524	Hs.58585	ESTs	
23368	9	T59005	Hs.10476	EST	
8240	9	AA397841	Hs.106879	ESTs	
21778	9	R41389	Hs.26159	EST	
31168	9	N63965	Hs.48903	ESTs	
3440	9	S72370	Hs.89890	Pyruvate carboxylase	
25930	9	AA164928		EST - RC_AA164928	
29971	9	N25657	Hs.93692	EST	
39771	9	H17463	Hs.101735	ESTs	

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## FIGURE 7 (CONT.)

21481	9	R26141	Hs.24032	ESTs Highly similar to transmembrane receptor [M.musculus]
10887	9	AA101632	Hs.22971	ESTs
31431	9	N68666	Hs.76798	ESTs
30756	9	N52398	Hs.39252	ESTs
35829	9	AA411438	Hs.74635	Dihydropyrimidine dehydrogenase (E3 component of pyruvate dehydrogenase complex 2-oxo-glutarate complex branched chain keto acid dehydrog
24540	9	Z38435	Hs.19235	ESTs
37500	9	AA455474	Hs.100530	ESTs
19007	9	H03358	EST - RC_H03358	
42650	9	W92272	Hs.25601	Homo sapiens zinc-finger helixcase (hZFH) mRNA complete cds
16705	9	AA043675	Hs.62633	EST
40275	9	H94647	Hs.102329	ESTs
24372	9	W87423	Hs.35598	ESTs
9011	9	C01394	Hs.106823	Homo sapiens clone 24818 mRNA sequence
40780	9	N59568	Hs.108107	ESTs
17177	9	AA079331	EST - RC_AA079331	
20878	9	N70305	Hs.34492	ESTs
38140	9	AA486273	Hs.100472	ESTs
3490	9	S77763	Hs.75643	Homo sapiens NF-E2 protein (NF-E2) mRNA complete cds
38112	9	AA620724	Hs.112890	ESTs
27347	9	AA424940	Hs.43590	ESTs
14747	9	D60384	Hs.34882	ESTs
23599	9	T82307	EST - RC_T82307	
23979	9	T98262	EST - RC_T98262	
27759	9	AA453472	Hs.95111	ESTs
36691	9	AA432381	Hs.97357	ESTs Moderately similar to NITRIC OXIDE SYNTHASE INDUCIBLE [H.sapiens]
28782	9	AA284181	Hs.89310	ESTs
28818	9	AA285145	Hs.50446	ESTs
22334	9	R61290	Hs.25870	ESTs
29892	9	N22995	Hs.42829	ESTs
22945	9	T10134	Hs.9877	Homo sapiens mRNA for KIAA0688 protein complete cds
30518	9	N50656	Hs.93996	ESTs Highly similar to mosaic protein LR11 [H.sapiens]
23715	9	H98700	Hs.60887	ESTs
37560	9	AA457023	EST - RC_AA457023	
23264	9	T50062	Hs.9092	EST
31001	9	N62200	Hs.47566	ESTs
17841	9	AA156109	Hs.66180	ESTs
3478	9	S76992	Hs.104005	Vav 2 oncogene
11605	9	AA243139	Hs.4863	ESTs
19032	9	H04822	Hs.30494	EST
29933	9	N24182	Hs.93677	ESTs

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## FIGURE 7 (CONT.)

26522	9	AA280431	Hs.88756	ESTs	Human repressor transcriptional factor (ZNF85) mRNA complete cds
4289	9	U35376	Hs.37138	ESTs	Human metallothionein (MT)-F gene
42034	9	T56281	Hs.110440	ESTs	
30447	9	N47439	Hs.44603	ESTs	
25238	9	AA039568	EST - RC_AA039568	ESTs	
20238	9	N30077	Hs.14855	ESTs	
30232	9	N34500	Hs.44600	EST	
17017	9	AA069920	EST - RC_AA069920	ESTs	
11845	9	AA259084	Hs.10839	ESTs	Weakly similar to unknown [S.cerevisiae]
30229	9	N34457	EST - RC_N34457	EST	
30737	9	N52137	Hs.47442	EST	
30555	9	N49259	EST - RC_N49259	EST	
981	9	HG2139	EST - HG2139-HT2208_f	EST	
30498	9	N48325	Hs.93956	EST	
40434	9	N21461	EST - RC_N21461	EST	
36788	9	AA435824	Hs.95594	ESTs	Homo sapiens BAC clone RG113D17 from 7p14-p15
28991	9	F04652	Hs.66195	ESTs	
25942	9	AA234187	Hs.87267	ESTs	
30466	9	N47951	Hs.57485	ESTs	
19317	9	H17476	Hs.11615	ESTs	Weakly similar to dual specificity phosphatase [H.sapiens]
13859	8	AA470086	Hs.24309	ESTs	Highly similar to S-ACYL FATTY ACID SYNTHASE THIOESTERASE MEDIUM CHAIN [Rattus norvegicus]
23445	8	T65992	Hs.11722	EST	
24448	8	W93273	Hs.9270	ESTs	Weakly similar to isopentenyl-diphosphate Delta-isomerase [H.sapiens]
7583	8	AA187824	Hs.63559	ESTs	Highly similar to PROTEIN CDC27HS [Homo sapiens]
22778	8	R94940	Hs.35372	ESTs	Weakly similar to IIII ALU CLASS B WARNING ENTRY IIII [H.sapiens]
16439	8	AA024835	Hs.47584	ESTs	Homo sapiens Shab-related delayed-rectifier K+ channel alpha subunit (KCNS3) mRNA complete cds
42395	8	W42733	Hs.109870	ESTs	
19991	8	H90887	Hs.18357	ESTs	
23690	8	T87648	EST - RC_T87648	ESTs	
7111	8	AA018804	Hs.125175	ESTs	Highly similar to RAS-RELATED PROTEIN RAB-14 [Rattus norvegicus]
6400	8	X86163	Hs.54421	Bradykinin receptor B2	
42474	8	W63747	Hs.105918	H.sapiens TTF mRNA for small G protein	
11425	8	AA233257	Hs.25511	Homo sapiens mRNA for Hic-5 partial cds	
27039	8	AA400277	Hs.48849	ESTs	
32206	8	R44386	Hs.91703	ESTs	
15310	8	W19098	Hs.7921	ESTs	
36601	8	AA431337	Hs.98017	ESTs	
463	8	D38462	EST - D38462	ESTs	
31674	8	N74357	Hs.50482	ESTs	
31182	8	N64339	Hs.48956	EST	

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## FIGURE 7 (CONT.)

13499	8	AA453458	Hs.7301	ESTs	
37514	8	AA455914	Hs.1019	Parathyroid hormone receptor 1	
5998	8	X65844	Hs.75063	HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 ENHANCER-BINDING PROTEIN 2	
962	8	HG180-		EST - HG180-HT180	
40790	8	N52328	Hs.3786	Glutamate receptor metabotropic 3	
25700	8	AA131512	Hs.103820	EST	
36880	8	AA436706	Hs.98895	ESTs	
2809	8	M55267	Hs.41846	EV12A PROTEIN PRECURSOR TROPIC VIRAL INTEGRATION SITE 2A PROTEIN)	
5620	8	X14885	Hs.2025	Transforming growth factor beta 3	
16643	8	AA039325	Hs.47200	ESTs	
32051	8	R01450	Hs.91061	ESTs	
33550	8	W90617	Hs.50120	ESTs	
6177	8	X75535	Hs.118884	33 KD HOUSEKEEPING PROTEIN	
33000	8	W45531	Hs.94642	ESTs	
20066	8	H98701	Hs.4985	ESTs	
4590	8	U50534	Hs.30649	Human infant brain mRNA clone 13cDNA73	
37199	8	AA448257	Hs.97127	ESTs	
24601	8	Z38844	Hs.25803	ESTs	
33589	8	W93074	Hs.59342	ESTs	
37389	8	AA453466	Hs.99330	ESTs	
5801	8	X55448	Hs.3118	H.sapiens mRNA for 2.19 gene	
28748	8	D25912	Hs.74832	ESTs	
40070	8	H72592	Hs.77554	ESTs	
40367	8	H98857	Hs.75520	Human mRNA for KIAA0041 gene partial cds	
33609	8	W93585	Hs.59476	ESTs	
24502	8	Z38214	Hs.26946	ESTs	
11129	8	AA156873	Hs.15970	ESTs	
7144	8	AA033659	Hs.95154	ESTs	
28584	8	C21221	Hs.66619	ESTs Highly similar to METALLOTHIONEIN-IA [Equus caballus]	
22165	8	R52822	Hs.22003	ESTs	
31987	8	N94551	Hs.55060	ESTs	
32470	8	T15956	Hs.65289	EST	
38542	8	AA599152	Hs.91379	PTB-ASSOCIATED SPLICING FACTOR	
40438	8	N21684	Hs.80500	Human mRNA for KIAA0061 gene partial cds	
34471	8	AA258843	Hs.111376	ESTs	
41571	8	R61005	Hs.115170	Homo sapiens mRNA for GalT4 protein	
31417	8	N68435	Hs.49516	ESTs	
23951	8	T97318	Hs.18037	ESTs	
7832	8	AA249260	Hs.28545	ESTs	
27928	8	AA451093	Hs.26799	ESTs Moderately similar to zinc finger protein [R.norvegicus]	

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## FIGURE 7 (CONT.)

2017	8	L34219	Hs.1933	Cellular retinaldehyde-binding protein
25530	8	AA098834	Hs.83428	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1 (p105)
20556	8	N55189	Hs.34081	ESTs
27036	8	AA400155	Hs.142935	ESTs
22651	7	R85266	Hs.33487	ESTs
33663	7	W95605	Hs.59736	EST
19374	7	H19472	Hs.31653	EST
10275	7	R79356	Hs.19280	ESTs Weakly similar to PROTEIN Q300 [Mus musculus]
39471	7	D60265	Hs.107894	ESTs
25100	7	AA079426	Hs.103343	EST
8828	7	AB002316	Hs.65746	Human mRNA for KIAA0318 gene partial cds
17132	7	AA075674	Hs.82577	EST - RC_AA075674
15915	7	Y09858	Hs.86723	ESTs
8216	7	AA393089	Hs.29196	EST
22512	7	R71489	Hs.30842	ESTs
19097	7	H08171	Hs.130843	ESTs
25048	7	AA011041	Hs.97699	ESTs
35353	7	AA398962	Hs.49193	EST
31278	7	N66399	Hs.7569	EST
23149	7	T26893	Hs.22057	ESTs
11880	7	AA262783	Hs.71016	ESTs
17547	7	AA127595	Hs.55501	ESTs
32854	7	W32094	Hs.98852	EST
36822	7	AA435978	Hs.41717	Human 3'5' cyclic nucleotide phosphodiesterase (HSPDE1A3A) mRNA complete cds
35530	7	AA400893	Hs.106185	Human Ral guanine nucleotide dissociation stimulator mRNA partial cds
3869	7	U14417	Hs.100739	ESTs
9368	7	H09246	Hs.111075	Human orphan G-protein coupled receptor Dez isoform a mRNA complete cds
15154	7	U79527	Hs.19748	EST
21178	7	R06607	Hs.56213	ESTs
33081	7	W57731	Hs.21323	ESTs
13948	7	AA465664	Hs.13258	ESTs
18659	7	F03220	Hs.1964	Solute carrier family 5 (sodium/glucose cotransporter) member 1
1979	7	L28339	Hs.29978	ESTs
22809	7	R80945	Hs.1817	Myeloperoxidase
2418	7	M19507	Hs.124418	ESTs
28863	7	D60051	Hs.51501	ESTs
26764	7	AA283926	Hs.59096	EST - X95677
6544	7	X95677	Hs.67624	ESTs
33524	7	W89188	Hs.67624	ESTs
18374	7	AA226877	Hs.67624	ESTs

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## FIGURE 7 (CONT.)

10108	7	R25089	Hs.23790	ESTs	
26178	7	AA251153	Hs.27910	Homo sapiens centrosomal Nek2-associated protein 1 (C-NAP1) mRNA complete cds	
36428	7	AA427605	Hs.98551	Human cardiac myosin binding protein-C (MyBP-C) gene complete cds	
29808	7	N21032	Hs.42931	EST	
24837	7	Z41186	Hs.27997	ESTs	
24909	7	Z98492	Hs.27250	ESTs	
26333	7	AA256075	Hs.82280	Homo sapiens regulator of G protein signaling 10 mRNA complete cds	
11507	7	AA235465	Hs.29161	ESTs	
40387	7	H99460	Hs.108873	ESTs	
16112	7	AA004377	Hs.91813	Human butyrophilin (BTF2) mRNA complete cds	
25413	7	AA065096		EST - RC_AA065096	
13232	7	AA443844	Hs.20887	ESTs	
27236	7	AA417037	Hs.67805	ESTs	
21694	7	R38944	Hs.129672	ESTs	
9294	7	D82712	Hs.15301	ESTs Weakly similar to weakly similar to ANK repeat region of Fowlpox virus BamHI-ori7 protein [C.elegans]	
18886	7	AA057119	Hs.5091	Homo sapiens torsinB (DQ1) mRNA partial cds	
20083	7	H98879	Hs.28029	ESTs Highly similar to EPIDERMAL GROWTH FACTOR PRECURSOR [Mus musculus]	
30651	7	N51029	Hs.38672	ESTs	
22362	7	R62447	Hs.22123	ESTs	
21561	7	R33245	Hs.23076	ESTs	
21636	7	R37501	Hs.23600	ESTs	
21223	7	R08175	Hs.110130	Homo sapiens chromosome 19 cosmid F22329	
32218	7	R45654	Hs.1339	Collagen type IV alpha 2	
13405	7	AA450118	Hs.25722	ESTs Weakly similar to KRUPPEL-RELATED ZINC FINGER PROTEIN 1 [Homo sapiens]	
30627	7	N50740	Hs.47111	ESTs	
30117	7	N30824	Hs.44227	ESTs Weakly similar to IIII ALU SUBFAMILY J WARNING ENTRY IIII [H.sapiens]	
31344	7	N67238		EST - RC_N67238	
38119	7	AA485714	Hs.105689	ESTs	
33297	7	W73781	Hs.105715	ESTs	
6892	7	Z30426	Hs.82401	CD69 antigen (early T cell activation antigen)	
9923	7	N44998	Hs.24550	ESTs	
27942	7	AA463237	Hs.13021	ESTs	
34845	7	AA293420	Hs.95464	ESTs Moderately similar to transcription enhancer factor TEF1 [H.sapiens]	
29829	7	N21460	Hs.43005	ESTs	
15059	7	U53831	Hs.85280	Human interferon regulatory factor 7 (humir7) mRNA complete cds	
40441	7	N22053	Hs.112083	ESTs	
25095	7	AA018937	Hs.109558	ESTs	
2941	7	M62840	Hs.82542	Acylglycyl hydrolase (neutrophil)	
1945	7	L25878	Hs.89649	Epoxide hydrolase 1 microsomal (xenobiotic)	
42648	7	W82150	Hs.79310	Human GAP SH3 binding protein mRNA complete cds	

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## FIGURE 7 (CONT.)

19592	7	H40896	Hs.33790	ESTs	
29801	7	N20939	Hs.38759	ESTs	
15417	7	W26982	Hs.39330	ESTs	
39877	7	H39827	Hs.107896	ESTs	
23967	7	T97910	Hs.18184	EST	
20041	7	H97012	Hs.11050	ESTs	Weakly similar to L8004.7 gene product [S.cerevisiae]
18314	7	AA214510	Hs.86618	ESTs	
22452	7	R67370	Hs.28758	ESTs	
30496	7	N48294	Hs.46850	EST	
26830	7	AA287057	Hs.48820	ESTs	
33432	7	W86075	Hs.38715	ESTs	
31394	7	N67990	Hs.49421	ESTs	
7053	6	Z84721	Hs.75792	Hemoglobin alpha 1	
33518	6	W88996	Hs.59134	EST	
5355	6	U94320	Hs.123021	Human Y5 receptor mRNA complete cds	
41311	6	R38516	Hs.124255	EST	
12545	6	AA406320	Hs.24702	ESTs	
23843	6	T92561	Hs.110422	ESTs	
21667	6	R38475	Hs.21408	ESTs	
17472	6	AA121704	Hs.69494	ESTs	
25848	6	AA126673	Hs.110341	ESTs	
32710	6	T87324	Hs.91021	EST	
3450	6	S73840	Hs.931	H.sapiens mRNA for fast 2a myosin heavy chain (3' end)	
979	6	HG2090-	EST - HG2090-HT2152		
8151	6	AA348686	EST - AA348686		
35380	6	AA399522	Hs.97671	ESTs	Weakly similar to T04A8.9 [C.elegans]
23798	6	T91047	Hs.126765	ESTs	
940	6	HG1496-	EST - HG1496-HT1496		
35896	6	AA412106	Hs.97349	ESTs	
16350	6	AA019034	Hs.94000	ESTs	
27547	6	AA438613	Hs.72157	ESTs	
22528	6	R73036	Hs.29323	EST	
25815	6	AA149889	Hs.96200	ESTs	Weakly similar to A-kinase anchor protein 95 AKAP95 [R.norvegicus]
8473	6	AA437346	Hs.2967	SHB adaptor protein (a Src homology 2 protein)	
35742	6	AA406058	Hs.97999	EST	
36538	6	AA430002	Hs.112044	ESTs	
17831	6	AA152323	Hs.71947	ESTs	
25072	6	AA015789	Hs.33792	ESTs	
15632	6	W56102	Hs.71218	ESTs	
20442	6	N50827	Hs.25275	ESTs	

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## FIGURE 7 (CONT.)

28357	6	AA009120	Hs.56185	ESTs	Weakly similar to The KIAA0147 gene product is related to adenylyl cyclase. [H.sapiens]
25022	6	AA007591	Hs.110227	ESTs	
29334	6	H68158	Hs.28310	ESTs	
28148	6	AA488875	Hs.6433	Homo sapiens clone 24523 mRNA sequence	
30744	6	N52195	Hs.105365	H.sapiens mRNA for arginine methyltransferase	
27577	6	AA442090	Hs.119295	ESTs	
33472	6	W87469	Hs.58992	ESTs	
25687	6	AA130867	Hs.100119	ESTs	
10549	6	AA027317	Hs.19136	ESTs	Weakly similar to III ALU SUBFAMILY J WARNING ENTRY III [H.sapiens]
32836	6	W23631	Hs.55426	ESTs	
17025	6	AA070160		EST - RC_AA070160	
22939	6	T10070	Hs.4217	Homo sapiens mRNA for KIAA0867 protein partial cds	
15803	6	X52332	Hs.104115	Human Kox1 gene for zinc finger protein	
34618	6	AA282143	Hs.58094	H.sapiens mRNA for melanoma growth regulatory protein MIA	
11074	6	AA148983	Hs.29068	ESTs	
12212	6	AA297746	Hs.22654	ESTs	
16102	6	AA002150	Hs.59872	ESTs	
31340	6	N67197	Hs.50125	EST	
19459	6	H24317	Hs.6526	ESTs	
17533	6	AA127098	Hs.71057	EST	
22017	6	R46597	Hs.22703	ESTs	
23687	6	T87519	Hs.16075	ESTs	Weakly similar to no similarities to reported gene products [H.sapiens]
30298	6	N36130	Hs.44792	EST	Weakly similar to hypothetical protein [H.sapiens]
28973	6	F04014	Hs.55996	ESTs	
17042	6	AA070397		EST - RC_AA070397	
20817	6	N86628	Hs.37630	ESTs	
18430	6	AA232138	Hs.118898	ESTs	
28493	6	C14820	Hs.67186	EST	
30497	6	N48302	Hs.46852	EST	
32502	6	T16896	Hs.65373	ESTs	
41324	6	R38804	Hs.13434	Homo sapiens clone 24418 mRNA sequence	
18418	6	AA228096	Hs.60480	ESTs	
23622	6	T84046	Hs.15345	ESTs	
15342	6	W25781	Hs.8136	Homo sapiens clone 23698 mRNA sequence	
15246	6	W01094	Hs.84628	ESTs	
2247	6	M10321	Hs.110802	VON WILLEBRAND FACTOR PRECURSOR	
31906	6	N32643	Hs.35986	Homo sapiens CASK mRNA complete cds	
9062	6	C06238	Hs.95865	Homo sapiens clone 24700 unknown mRNA partial cds	
38640	6	AA599142	Hs.112509	EST	
42622	6	W87801	Hs.108209	ESTs	

## FIGURE 7 (CONT.)

27906	6	AA460671	Hs.54837	ESTs	
7293	6	AA085354	EST - AA085354	ESTs	
27322	6	AA424325	Hs.40496	ESTs	
5774	6	X54199	Hs.82285	Phosphoribosylglychamide formyltransferase phosphoribosylglycinamide synthetase phosphoribosylaminimidazole synthetase	
33469	6	W87454	Hs.58987	ESTs Highly similar to homogenisate 12-dioxygenase [H.sapiens]	
40329	6	H97488	Hs.108802	Human N-ethylmaleimide-sensitive factor mRNA partial cds	
26539	6	AA278848	Hs.88522	ESTs	
23579	6	T81098	Hs.124065	ESTs	
22435	6	R68706	Hs.28706	ESTs	
19956	6	H80842	Hs.37445	ESTs	
18607	6	F02345	Hs.21197	ESTs	
18991	6	H02554	Hs.30323	ESTs	
7810	6	AA248169	Hs.106709	ESTs Highly similar to LATENT TRANSFORMING GROWTH FACTOR BETA BINDING PROTEIN 1 PRECURSOR [Rattus norvegicus]	
30810	6	N53419	Hs.47646	ESTs	
17996	6	AA169605	Hs.72815	ESTs	
26245	6	AA252357	Hs.87794	ESTs	
13348	6	AA449267	Hs.17914	ESTs Weakly similar to HIGH AFFINITY IMMUNOGLOBULIN EPSILON RECEPTOR BETA-SUBUNIT [M.musculus]	
15034	6	U43701	Hs.75403	60S RIBOSOMAL PROTEIN L23A	
33802	6	Z41058	Hs.79248	ESTs	
33394	6	W84432	Hs.58670	ESTs	
31170	6	N84017	Hs.48911	ESTs	
40828	6	N64144	Hs.102749	EST	
1789	6	L13258	Hs.936	Solute carrier family 17 (sodium phosphate) member 2	
17740	5	AA142922	Hs.9817	Homo sapiens Arg/Abi-interacting protein ArgBP2a (ArgBP2a) mRNA complete cds	
9509	5	H58970	Hs.49683	ESTs	
15540	5	W30895	Hs.7535	ESTs	
27827	5	AA455976	Hs.42355	ESTs	
30897	5	N51585	Hs.47049	ESTs	
40289	5	H95787	Hs.108745	ESTs	
16627	5	AA036779	Hs.61826	Homo sapiens clone 23928 mRNA sequence	
20659	5	N62915	Hs.57672	ESTs Weakly similar to weakly similar to myosin heavy chain [C.elegans]	
31009	5	N62272	Hs.48502	ESTs	
14877	5	T65508	Hs.14623	Homo sapiens mRNA for KIAA0625 protein partial cds	
31102	5	N63178	Hs.48728	ESTs	
22830	5	R98421	EST - RC_R98421	ESTs	
25248	5	AA040507	Hs.92924	ESTs	
32145	5	R38910	Hs.66170	Homo sapiens clone 24503 mRNA sequence	
27970	5	AA464626	Hs.10247	Activated leucocyte cell adhesion molecule	
34509	5	AA262974	Hs.111394	ESTs	
29522	5	H88338	Hs.90250	ESTs	

## FIGURE 7 (CONT.)

32159	5	R40974	Hs.124270	ESTs	ESTs Weakly similar to kynurenine/alpha-aminoacidipate aminotransferase [R.norvegicus]
35492	5	AA400514	Hs.97505	ESTs	
37630	5	AA459649	Hs.99485	ESTs	
27103	5	AA404282	Hs.63481	ESTs	
17209	5	AA082933		EST - RC_AA082933	
589	5	D50930	Hs.5084	Human mRNA for KIAA0140 gene complete cds	
17489	5	AA122354	Hs.70811	ESTs	
6293	5	X80878	Hs.95262	Human R kappa B mRNA complete cds	
5067	5	U77845	Hs.21254	Human hTRIP (hTRIP) mRNA complete cds	
23060	5	T23513	Hs.7147	ESTs	
28902	5	D80990	Hs.45247	ESTs	
32328	5	R76401	Hs.92262	ESTs	
33218	5	W70259	Hs.48523	ESTs	
28751	5	D45455	Hs.65524	ESTs	
21400	5	R19360	Hs.14651	ESTs	
15557	5	W36290	Hs.9115	ESTs	
12631	5	AA412293	Hs.21258	ESTs	
32282	5	R62579	Hs.62264	ESTs	
10416	5	AA009809	Hs.37599	ESTs	
40308	5	H96306	Hs.32980	Human mRNA for BST-1 complete cds	
11599	5	AA242829	Hs.7508	ESTs	
33220	5	W70279	Hs.94811	ESTs Weakly similar to 3-oxoacyl-[acyl-carrier protein] reductase [E.coli]	
23100	5	T23867	Hs.7316	ESTs	
15333	5	W24154	Hs.6166	ESTs	
8331	5	AA412555		EST - AA412555	
9010	5	C01360	Hs.67364	Homo sapiens clone 23904 mRNA sequence	
4660	5	U53225	Hs.75283	Sorting nexin 1	
25213	5	AA035444	Hs.100543	Homo sapiens clone 24505 mRNA sequence	
25242	5	AA039933	Hs.30941	Myasthenic syndrome antigen B [human fetal brain mRNA 3477 nt]	
28708	5	D20538	Hs.90165	EST	
7435	5	AA096412	Hs.26236	ESTs	
25538	5	AA099590	Hs.101442	ESTs Highly similar to ZINC FINGER PROTEIN 8 [Homo sapiens]	
271	5	D14823		EST - D14823	
5490	5	X04571	Hs.2230	Epidermal growth factor	
18812	5	F10040	Hs.13251	ESTs	
23393	5	T62918	Hs.11110	ESTs Weakly similar to ZINC FINGER PROTEIN 42 [H.sapiens]	
23446	5	T66282	Hs.12907	ESTs	
35204	5	AA398155	Hs.97600	ESTs	
31369	5	N67598	Hs.136395	ESTs	
5244	5	U85992	Hs.97197	Human clone IMAGE:35527 unknown protein mRNA partial cds	

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## FIGURE 7 (CONT.)

20835	5	N69215	Hs.37456	ESTs	
16502	5	AA027059	Hs.61425	EST	
23691	5	T87893	Hs.16414	ESTs	
31842	5	N90168	Hs.54593	EST	
7845	5	AA249611	EST - AA249611	EST	
29297	5	H65459	Hs.38323	ESTs	
7953	5	AA284403	Hs.74750	Homo sapiens mRNA for KIAA0554 protein partial cds	
38412	5	AA426484	Hs.98466	ESTs	
19357	5	H18929	EST - RC_H18929	EST	
16299	5	AA016258	EST - RC_AA016258	EST	
25312	5	AA047078	Hs.95278	ESTs Weakly similar to IIII ALU SUBFAMILY SQ WARNING ENTRY IIII [H.sapiens]	
27617	5	AA446114	Hs.55409	ESTs	
42432	5	W46403	Hs.107293	ESTs	
38432	5	AA496983	Hs.78572	Laminin alpha 4	
32215	5	R45175	Hs.117183	ESTs	
15214	5	U93553	Hs.91310	Human alpha1-fetoprotein transcription factor (hTF) mRNA complete cds	
15141	5	U78798	Hs.90957	Human TNF receptor associated factor 6 (TRAF6) mRNA complete cds	
20052	5	H97922	Hs.5376	Human LAR-interacting protein 1a mRNA complete cds	
7551	5	AA156838	Hs.107941	ESTs	
28451	5	AA259058	Hs.43616	ESTs	
42355	5	W20404	Hs.55405	ESTs	
39480	5	D60419	Hs.81915	STATHMIN	
17369	5	AA101833	Hs.69293	EST	
14993	5	U22172	Hs.73046	Human DNA damage repair and recombination protein RAD52 pseudogene mRNA partial cds	
23400	5	T63396	Hs.105095	ESTs	
21153	5	R05315	EST - RC_R05315	EST	
14282	5	AA505141	Hs.11923	ESTs	
21104	5	R01081	EST - RC_R01081	EST	
32825	5	W20364	Hs.55412	ESTs	
35018	5	AA349591	EST - RC_AA349591	EST	
25104	5	AA019598	Hs.103351	ESTs	
19235	5	H12725	Hs.31181	ESTs	
34979	5	AA347209	Hs.7841	Human mRNA for KIAA0324 gene partial cds	
21501	5	R26855	Hs.24120	ESTs	
18331	5	AA218543	Hs.10881	Homo sapiens mRNA for KIAA0541 protein partial cds	
37529	5	AA455112	Hs.99410	ESTs	
15532	5	W28944	Hs.5296	ESTs Highly similar to PUTATIVE 2-HYDROXYACID DEHYDROGENASE IN BISC-CSPA INTERGENIC REGION [Escherichia coli]	
11858	5	AA262308	Hs.106385	ESTs	
29450	5	H80865	Hs.111026	Phosphatidylinositol glycan class F	
37294	5	AA450127	Hs.110571	ESTs Highly similar to MYELOID DIFFERENTIATION PRIMARY RESPONSE PROTEIN MYD118 [Mus musculus]	

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## FIGURE 7 (CONT.)

35170	5	AA397830	Hs.98347	ESTs Weakly similar to rvp-1 [H.sapiens]
23201	5	T40852	Hs.8279	ESTs
27012	5	AA398913	Hs.45231	ESTs
28767	5	D45608	Hs.83792	Surfactant pulmonary-associated protein D
17777	5	AA149634	Hs.82788	ESTs Weakly similar to hypothetical L1 protein [H.sapiens]
20588	5	N58009	Hs.36218	ESTs
20356	5	N39453	Hs.27371	ESTs
23375	5	T59670	Hs.10615	EST
17030	5	AA070188	EST - RC_AA070188	
30752	5	N52340	Hs.118084	EST
25808	5	AA149226	Hs.95821	Human osteoclast stimulating factor mRNA complete cds
31345	5	N67268	Hs.50139	ESTs
30784	5	N52857	Hs.47558	ESTs
13707	5	AA460281	Hs.14697	ESTs
29199	5	H25761	Hs.57082	EST
39003	4	AA609920	Hs.112785	EST
41529	4	R54458	Hs.2699	Glypican 1
3151	4	M83652	Hs.53155	Properdin P factor complement
33134	4	W61264	Hs.57829	ESTs
29196	4	H24456	Hs.85053	Homo sapiens clone 24440 mRNA sequence
12863	4	AA425782	Hs.27973	ESTs
11949	4	AA278827	Hs.125035	ESTs
31925	4	N92924	Hs.125032	ESTs
35256	4	AA398428	Hs.97623	ESTs
39838	4	H27216	Hs.107635	ESTs
30796	4	N53046	Hs.91146	ESTs Moderately similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]
19464	4	H24458	Hs.32085	EST
42486	4	W68410	Hs.105857	Calbindin 2 (29kD calretinin)
34274	4	AA236352	Hs.110821	ESTs
37648	4	AA459917	Hs.99506	EST
3169	4	M85085	Hs.693	Cleavage stimulation factor 3' pre-RNA subunit 2 64kD
10326	4	R96417	Hs.107795	ESTs
15063	4	U56814	Hs.85646	Homo sapiens DNase gamma mRNA complete cds
23571	4	T80628	Hs.108169	ESTs
14377	4	AA599583	Hs.15299	ESTs Weakly similar to HSM-2 [H.sapiens]
22255	4	R56239	Hs.6666	ESTs
36820	4	AA435968	Hs.98849	ESTs Weakly similar to biithoraxoid [D.melanogaster]
35063	4	AA358015	Hs.96998	EST
12376	4	AA399271	Hs.19610	ESTs
31406	4	N68163	Hs.49455	EST

## FIGURE 7 (CONT.)

27430	4	AA429028	Hs.42676	ESTs Moderately similar to IIII ALU SUBFAMILY SB WARNING ENTRY IIII [H.sapiens]
30362	4	N40170	Hs.45046	ESTs
30599	4	N50039	Hs.47004	ESTs
27894	4	AA460319	Hs.48469	ESTs
31844	4	N90218	Hs.54607	ESTs
24935	4	AFFX-	AFFX-HUNGAPDH/M33197_M	
40906	4	N68829	Hs.131510	ESTs
35220	4	AA398246	Hs.97594	ESTs
10024	4	N94832	Hs.121699	ESTs
26358	4	U33053	Hs.2499	Human lipid-activated protein kinase PRK1 mRNA complete cds
24716	4	AA256396	Hs.88156	EST
19243	4	Z39734	Hs.22550	ESTs
41844	4	H13539	Hs.31222	ESTs
39774	4	T15833	Hs.100227	EST
20111	4	H17948	Hs.106311	Homo sapiens DGS-A mRNA 3' end
24008	4	N21380	Hs.25497	H.sapiens mRNA for ROX protein
8316	4	T99337	Hs.18624	ESTs
35072	4	AA410529	Hs.30732	ESTs
39794	4	AA358738	EST - RC_AA358738	
1517	4	H21819	Hs.14896	Homo sapiens clone 24590 mRNA sequence
9164	4	J04501	Hs.772	Glycogen synthase 1 (muscle)
35027	4	D38081	Hs.89887	Thromboxane A2 receptor
35185	4	AA349996	Hs.96937	ESTs
26570	4	AA398015	Hs.97590	Unfilled
19759	4	AA279425	Hs.86428	ESTs Weakly similar to hypothetical L1 protein [H.sapiens]
34310	4	H54352	Hs.36873	ESTs
39961	4	AA243416	Hs.75470	Homo sapiens mRNA expressed in osteoblast complete cds
23249	4	H57317	Hs.108161	ESTs
19119	4	T47919	Hs.8749	ESTs
14158	4	H09077	Hs.30895	EST
22866	4	AA490182	Hs.118598	ESTs
16935	4	R99938	Hs.36189	EST
41950	4	AA059392	Hs.66791	ESTs
20404	4	T3137	Hs.7967	ESTs
18406	4	N48694	Hs.30881	Homo sapiens liprin-alpha2 mRNA complete cds
16560	4	AA227962	Hs.112075	ESTs Weakly similar to reverse transcriptase [M.musculus]
26098	4	AA031308	Hs.24341	ESTs
34360	4	AA242831	Hs.87606	ESTs
16830	4	AA251547	Hs.104358	EST
	4	AA054222	Hs.40400	ESTs

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## FIGURE 7 (CONT.)

32668	4	T69284	Hs.2314	Mannose-binding lectin soluble (opsonic defect)
32912	4	W38051	EST - RC_W38051	
16230	4	AA011549	Hs.47884	ESTs
29696	4	H97909	Hs.42344	ESTs
8232	4	AA397529	EST - AA397529	
25584	4	AA112320	Hs.16704	ESTs
30878	4	N56882	Hs.46761	EST
40579	4	N34524	Hs.102516	ESTs
8026	4	AA301842	Hs.105189	ESTs Weekly similar to reverse transcriptase homolog [H.sapiens]
3094	4	M77481	Hs.72879	Human antigen (MAGE-1) gene complete cds
17480	4	AA121974	EST - RC_AA121974	
15766	4	W95777	Hs.90804	ESTs
34865	4	AA299903	Hs.111498	EST
29779	4	N20290	Hs.42836	ESTs
6547	4	X95808	Hs.9568	Human mRNA for KIAA0385 gene complete cds
24479	4	W95222	Hs.34192	ESTs
16135	4	AA004805	Hs.63668	Human Toll-like receptor 2 (TLR2) mRNA complete cds
11098	4	AA151243	Hs.38163	ESTs
14388	4	AA599742	Hs.21600	ESTs
36078	4	AA417275	Hs.98214	ESTs
23440	4	T65566	Hs.12859	ESTs
20863	4	N69989	Hs.19167	ESTs
20347	4	N39117	Hs.12250	ESTs
7795	4	AA247455	Hs.15220	ESTs
10729	4	AA054087	Hs.18858	ESTs
12734	4	AA419200	Hs.5737	ESTs
24446	4	W93119	Hs.19512	ESTs
30734	4	N52083	Hs.47418	EST
20641	4	N62353	Hs.109685	ESTs
21183	4	R06769	Hs.19795	ESTs
18138	4	AA192757	Hs.131687	ESTs
35310	4	AA398662	Hs.97302	ESTs
39497	4	D80154	Hs.56340	ESTs
29866	4	N22343	Hs.43145	ESTs
8707	4	AA479995	Hs.76982	Homo sapiens mRNA for KIAA0583 protein partial cds
18472	4	AA233299	Hs.72158	ESTs
24720	4	Z39754	Hs.23236	ESTs
40825	4	N63923	Hs.102746	ESTs
15375	4	W26395	Hs.56876	ESTs
32869	4	W35211	Hs.54801	ESTs

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## FIGURE 7 (CONT.)

4641	4	U52426	Hs.74597	Homo sapiens GOK (STIM1) mRNA complete cds
11786	4	AA256616	Hs.31707	ESTs
21571	4	R33841	Hs.24709	ESTs Highly similar to NUCLEOLYSIN TIA-1 [Homo sapiens]
1600	4	K03474		EST - K03474
21103	4	R01068	Hs.14603	ESTs
22993	4	T16358	Hs.106443	ESTs
36666	4	AA599661	Hs.103849	ESTs
27148	4	AA406231	Hs.100113	Human mRNA for KIAA0381 gene partial cds
26680	4	D20261	Hs.80067	ESTs
36397	4	AA426372	Hs.109804	Human mRNA for histone H1x complete cds
26915	4	AA330634		EST - RC_AA330634
6912	4	Z35278	Hs.2536	H.sapiens PEBP2aC1 acute myeloid leukaemia mRNA
31825	4	N89848	Hs.54543	ESTs
10763	4	AA057620	Hs.30807	ESTs
17007	4	AA069696	Hs.67317	ESTs
33439	4	W86445	Hs.58844	ESTs
27657	4	AA447612	Hs.60435	ESTs
26288	4	AA253393	Hs.87734	ESTs
8235	4	AA397616	Hs.107245	ESTs Moderately similar to potassium channel protein Raw3 [R.norvegicus]
12114	4	AA287097	Hs.25114	ESTs
879	4	D88155	Hs.97196	Human steroidogenic factor 1 mRNA complete cds
30793	4	N52979	Hs.51919	Plasminogen-like protein
13522	4	AA454115	Hs.6000	ESTs
20619	4	N68730	Hs.12160	ESTs
20019	4	H94266	Hs.9451	ESTs
32396	4	R95778	Hs.93008	EST
38162	4	AA487165	Hs.105706	EST
8487	4	AA442669		EST - AA442669
18444	4	AA232646	Hs.68061	ESTs
16183	4	AA010070	Hs.60339	EST
33047	4	W49755	Hs.89359	ESTs Moderately similar to type Ia hair keratin a3 [H.sapiens]
14797	4	S82769	Hs.104133	GABAA receptor gamma 3 subunit [human fetal brain mRNA Partial 1536 nt]
26107	3	AA243172	Hs.87619	ESTs
24421	3	W62001	Hs.120969	ESTs
27665	3	AA447759	Hs.134724	ESTs
19154	3	H10047	Hs.22515	ESTs
10933	3	AA121360	Hs.27567	ESTs Weakly similar to similar to alpha-13-mannosyl-glycoprotein beta-1 2-N-acetylglucosaminyltransferase [C.elegans]
7254	3	AA074897		EST - AA074897
18664	3	F04262	Hs.22137	ESTs
40997	3	N77504	Hs.44380	ESTs

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## FIGURE 7 (CONT.)

14971	3	U10493	Hs.438	Human Mox1 protein (MOX1) mRNA complete cds
11217	3	AA180487	Hs.62440	ESTs
16782	3	AA047265	Hs.82582	Homo sapiens mRNA for osteoblast specific cysteine-rich protein complete cds
21477	3	R28094	Hs.23531	ESTs
21382	3	R16896	Hs.89615	PROTEIN KINASE C THETA TYPE
19508	3	H28966		EST - RC_H28966
30301	3	N36174	Hs.2507	5-HYDROXYTRYPTAMINE 2B RECEPTOR
21553	3	R33005	Hs.23153	ESTs Weakly similar to ETX1 (alternatively spliced) [H.sapiens]
6102	3	X70340	Hs.2023	Transforming growth factor alpha
23502	3	T70580	Hs.13759	ESTs
8333	3	AA412620	Hs.4248	ESTs
30500	3	N48329	Hs.30490	ESTs Highly similar to HYPOTHETICAL 70.7 KD PROTEIN F09G8.3 IN CHROMOSOME III [Caenorhabditis elegans]
21431	3	R22057	Hs.23336	ESTs
35920	3	AA412290	Hs.98124	ESTs
12065	3	AA283907	Hs.110480	Homo sapiens clone 23837 mRNA sequence
19156	3	H10068	Hs.25924	Homo sapiens clone 24466 mRNA sequence
24844	3	Z41301	Hs.23539	ESTs
33178	3	W68846	Hs.141719	EST
2052	3	L36818	Hs.75339	Inositol polyphosphate phosphatase-like protein 1 (51C protein)
15327	3	W23474	Hs.23352	ESTs
18874	3	F10565	Hs.12345	ESTs
9039	3	C02049	Hs.106291	ESTs
37470	3	AA454935	Hs.99568	ESTs
19187	3	H10641	Hs.22828	ESTs
34898	3	AA303078	Hs.94479	Human GT334 protein (GT334) gene mRNA complete cds
30591	3	N49952	Hs.138717	ESTs
26997	3	AA398488	Hs.93090	ESTs
18647	3	F03004	Hs.27109	ESTs
17887	3	AA157291	Hs.72163	ESTs
15280	3	W07019	Hs.35088	ESTs
20465	3	N51599	Hs.14633	ESTs
11047	3	AA142849	Hs.22860	ESTs
19451	3	H23747	Hs.31697	ESTs
41621	3	R69233	Hs.101504	ESTs
2822	3	M55621	Hs.117946	N-acetylglucosaminyltransferase I
28675	3	D20188	Hs.74876	ESTs
13928	3	AA478441	Hs.11590	ESTs
29473	3	H83694	Hs.40478	ESTs
25829	3	AA151621	Hs.110964	ESTs
28532	3	C20680	Hs.88513	EST

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## FIGURE 7 (CONT.)

32376	3	R91391	Hs.64391	ESTs	Hs.64391	ESTs	Weakly similar to KIAA0009 [H.sapiens]
12064	3	AA283848	Hs.11367	ESTs	Hs.11367	ESTs	Weakly similar to KIAA0009 [H.sapiens]
15547	3	W32012	Hs.29353	ESTs	Hs.29353	ESTs	Weakly similar to KIAA0009 [H.sapiens]
40284	3	H95073	Hs.108734	ESTs	Hs.108734	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
22861	3	R99595	Hs.36152	ESTs	Hs.36152	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
15525	3	W28763	Hs.16349	ESTs	Hs.16349	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
17968	3	AA167496	Hs.72695	EST	Hs.72695	EST	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
3836	3	U12707	Hs.2157	ESTs	Hs.2157	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
4528	3	U48251	Hs.75871	ESTs	Hs.75871	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
29784	3	N20468	Hs.42849	ESTs	Hs.42849	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
7892	3	AA262100	Hs.133302	ESTs	Hs.133302	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
15279	3	W05746	Hs.9225	ESTs	Hs.9225	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
42064	3	T63364	Hs.9225	ESTs	Hs.9225	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
17943	3	AA165117	Hs.20509	ESTs	Hs.20509	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
4596	3	U50743	Hs.19520	ESTs	Hs.19520	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
16421	3	AA022541	Hs.61146	ESTs	Hs.61146	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
4914	3	U67511	Hs.105713	EST	Hs.105713	EST	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
39171	3	AA487301	Hs.2799	EST	Hs.2799	EST	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
20168	3	N24106	Hs.12575	ESTs	Hs.12575	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
18791	3	F09892	Hs.16511	ESTs	Hs.16511	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
24281	3	W79773	Hs.15769	ESTs	Hs.15769	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
13996	3	AA480607	Hs.34421	ESTs	Hs.34421	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
20563	3	N57797	Hs.99152	EST	Hs.99152	EST	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
37181	3	AA448158	Hs.23466	ESTs	Hs.23466	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
21450	3	R23146	Hs.31597	ESTs	Hs.31597	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
19634	3	H44866	Hs.7898	ESTs	Hs.7898	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
10163	3	R54534	Hs.7898	ESTs	Hs.7898	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
7059	3	Z96810	Hs.91797	EST - Z96810	Hs.91797	EST - Z96810	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
25762	3	AA136066	Hs.92897	ESTs	Hs.92897	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
27426	3	AA428900	Hs.8023	EST - RC_F09302	Hs.8023	EST - RC_F09302	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
29023	3	F09302	Hs.8023	EST - RC_F09302	Hs.8023	EST - RC_F09302	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
10989	3	AA132366	Hs.30204	ESTs	Hs.30204	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
6587	3	X97748	Hs.23523	ESTs	Hs.23523	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
8722	3	AA481309	Hs.8135	ESTs	Hs.8135	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
21476	3	R26055	Hs.97566	ESTs	Hs.97566	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
14096	3	AA487558	Hs.112774	ESTs	Hs.112774	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
35392	3	AA399562	Hs.8944	ESTs	Hs.8944	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
28608	3	C21509	Hs.113619	ESTs	Hs.113619	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
13350	3	AA449297	Hs.113619	ESTs	Hs.113619	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]
41202	3	R12808	Hs.113619	ESTs	Hs.113619	ESTs	Highly similar to HYPOTHETICAL 55.1 KD PROTEIN IN FAB1-PES4 INTERGENIC REGION [Saccharomyces cerevisiae]

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## FIGURE 7 (CONT.)

15612	3	W51955	Hs.73372	ESTs	
33930	3	AA169539	Hs.95870	ESTs	
34215	3	AA233855	Hs.104252	UTROPHIN	
19208	3	H11734	Hs.110454	ESTs Weakly similar to coded for by C. elegans cDNA cm10e3 [C.elegans]	
24047	3	W15386	Hs.26750	ESTs	
14852	3	T52099	Hs.100383	ESTs Highly similar to C-1-TETRAHYDROFOLATE SYNTHASE CYTOPLASMIC [Rattus norvegicus]	
27815	3	AA455370	Hs.59729	ESTs	
22610	3	R81173	Hs.11482	ESTs Highly similar to F11 antigen [H.sapiens]	
37510	3	AA455896	Hs.2699	Glypican 1	
37825	3	AA470073	Hs.104836	ESTs	
13321	3	AA448238	Hs.16714	ESTs	
25999	3	AA235375	Hs.87421	EST	
9738	3	M13150	Hs.99900	MAS1 oncogene	
16248	3	AA013125	Hs.40871	ESTs	
27582	3	AA442858	Hs.61979	ESTs Moderately similar to THREONYL-TRNA SYNTHETASE CYTOPLASMIC [H.sapiens]	
16546	3	AA029452	Hs.95162	ESTs	
16981	3	AA064859		EST - RC_AA064859	
22128	3	R51021	Hs.23161	Homo sapiens retinoic acid hydroxylase mRNA complete cds	
23312	3	T54617		EST - RC_T54617	
18783	3	F09741	Hs.124205	ESTs	
10308	3	R86920	Hs.127585	ESTs	
22518	3	R71892	Hs.25996	ESTs Highly similar to 40S RIBOSOMAL PROTEIN S27A [Homo sapiens Cavia porcellus]	
8255	3	AA400226	Hs.25024	ESTs Weakly similar to estrogen-responsive finger protein efp [H.sapiens]	
16361	3	AA019218	Hs.40550	ESTs Moderately similar to proto-cadherin 3 [R.norvegicus]	
5453	3	X02910	Hs.2037	Tumor necrosis factor	
22509	3	R71393	Hs.29190	ESTs	
20065	3	H98657	Hs.27291	ESTs	
31081	3	N63076	Hs.138746	EST	
39050	3	AA610112	Hs.124849	ESTs	
2493	3	M22919	Hs.77385	MYOSIN LIGHT CHAIN ALKALI SMOOTH-MUSCLE ISOFORM	
30159	3	N32823	Hs.44089	ESTs	
28913	3	F01560	Hs.22583	ESTs Highly similar to co-repressor protein [M.musculus]	
12257	3	AA350030	Hs.4221	ESTs	
359	3	D26350	Hs.75119	Human mRNA for type 2 inositol 145-trisphosphate receptor complete cds	
23587	3	T81358	Hs.14908	ESTs	
14323	3	AA598575	Hs.12851	ESTs	
27231	3	AA416936	Hs.7491	Homo sapiens methionine synthase reductase (MTRR) mRNA complete cds	
34914	3	AA338729	Hs.133096	ESTs	
21233	3	R08359	Hs.19308	ESTs	
23660	3	T86475	Hs.16193	ESTs	

## FIGURE 7 (CONT.)

14236	3	AA496891	Hs.5011	ESTs Weakly similar to The ha1237 gene product is related to S.pombe rad21 gene product. [H.sapiens]
17617	3	AA131394	Hs.44672	ESTs Weakly similar to The KIAA0147 gene product is related to adenylyl cyclase. [H.sapiens]
24594	3	Z38804	Hs.22555	ESTs Highly similar to OPIOID BINDING PROTEIN/CELL ADHESION MOLECULE PRECURSOR [Bos taurus]
7426	3	AA095885	Hs.111818	Homo sapiens heat shock factor binding protein 1 HSBP1 mRNA complete cds
34871	3	AA300151	Hs.125146	ESTs
17962	3	AA167051	Hs.83525	Human brain mRNA homologous to 3'UTR of human CD24 gene partial sequence
24337	3	W86007	Hs.8876	ESTs
22569	3	R79580	Hs.29874	ESTs
24554	3	Z38522	Hs.27082	EST
22348	3	R61750	Hs.6136	ESTs
30217	3	N34288	Hs.44554	EST
10210	3	R67468	Hs.131828	ESTs
22156	3	R52145	Hs.25894	ESTs
16404	3	AA021284	Hs.60554	ESTs Moderately similar to sodium-calcium exchanger form 3 [R.norvegicus]
29310	3	H66542	Hs.88729	ESTs
15956	3	Z21217	Hs.77695	Human mRNA for KIAA0008 gene complete cds
9758	3	M26393	Hs.127610	Acyl-Coenzyme A dehydrogenase C-2 to C-3 short chain
20917	3	N72295	Hs.18004	ESTs
4847	3	U64573	EST - U64573	
22964	3	T10362	Hs.57958	ESTs
9806	2	M79462	Hs.89533	Probable transcription factor PML (alternative products)
29807	2	N21031	Hs.42930	ESTs
39646	2	H02255	Hs.7288	Homo sapiens clone 23872 mRNA sequence
22733	2	R92181	Hs.34558	EST
23233	2	T41177	Hs.8410	Homo sapiens retinoid acid-inducible endogenous retroviral DNA
18549	2	F01360	Hs.6092	ESTs Highly similar to HYPOTHETICAL 54.9 KD PROTEIN C02F5.7 IN CHROMOSOME III [Caenorhabditis elegans]
31892	2	N91968	Hs.39635	ESTs
18861	2	F10452	Hs.12254	ESTs
24553	2	Z38521	Hs.9428	ESTs
19289	2	H16568	Hs.23748	ESTs
14185	2	AA490911	Hs.22393	Homo sapiens dnp1 mRNA complete cds
30723	2	N51935	Hs.47374	EST
34031	2	AA192514	Hs.83577	Human LIM protein MLP mRNA complete cds
18434	2	AA232206	Hs.50743	ESTs
14847	2	D20378	Hs.30731	EST
41048	2	N92734	Hs.115985	ESTs
38157	2	AA486858	Hs.105702	EST
33299	2	W73790	Hs.73803	IMMUNOGLOBULIN-RELATED 14.1 PROTEIN PRECURSOR
16616	2	AA035446	Hs.61783	ESTs
3276	2	M93718	Hs.76983	Nitric oxide synthase 3 (endothelial cell)

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## FIGURE 7 (CONT.)

33022	2	W46976	Hs.94667	EST	
31704	2	N75055	Hs.14832	ESTs	
38713	2	AA08577	Hs.112575	ESTs	
20396	2	N48293	Hs.12296	ESTs	
10310	2	R87373	Hs.75429	ESTs	
22388	2	R63695	Hs.1432	Protein kinase C substrate 80K-H	
15936	2	Z11737	Hs.2684	Flavin-containing monooxygenase 4	
23667	2	T86826	Hs.142528	ESTs	
30903	2	N57730	Hs.48058	EST	
20938	2	N73988	Hs.37477	ESTs Weakly similar to No definition line found [C.elegans]	
5935	2	X62466	Hs.108338	CDW52 antigen (CAMPATH-1 antigen)	
19304	2	H16976	Hs.7973	ESTs	
8804	2	AB000463	Hs.16227	Homo sapiens mRNA for SH3 binding protein complete cds clone:RES4-23A	
41485	2	R49689	Hs.5260	ESTs Weakly similar to C08G8.3 [C.elegans]	
24685	2	Z39406	Hs.11797	ESTs Moderately similar to retinoid X receptor interacting protein [M.musculus]	
25403	2	AA063316		EST - RC_AA063316	
35773	2	AA06219	Hs.104747	ESTs	
27965	2	AA464267	Hs.24912	Homo sapiens bicaudal-D (BICD) mRNA complete cds	
16911	2	AA058659	Hs.60669	ESTs	
42315	2	T97353		EST - RC_T97353	
40632	2	N45221		EST - RC_N45221	
15722	2	W79046	Hs.15250	Homo sapiens DBI-related protein mRNA complete cds	
14842	2	T47519		EST - T47519	
36088	2	AA417344	Hs.98220	ESTs Moderately similar to located at OATL1 [H.sapiens]	
15527	2	W28798	Hs.63280	Phosphodiesterase 6A cGMP-specific rod alpha	
10302	2	R84933	Hs.133217	ESTs	
21243	2	R08773	Hs.20231	ESTs	
7759	2	AA234687	Hs.64147	ESTs Weakly similar to F59C6.4 [C.elegans]	
31672	2	N74336	Hs.91681	ESTs	
28799	2	AA284722	Hs.89121	ESTs	
25857	2	AA156504	Hs.95875	EST	
16695	2	AA043115	Hs.9452	ESTs Weakly similar to ORF YDL077c [S.cerevisiae]	
964	2	HG1804		EST - HG1804-HT1829	
12439	2	AA401452	Hs.32060	ESTs	
19599	2	H41235	Hs.109968	ESTs	
24223	2	W70158	Hs.29696	ESTs	
21052	2	N93764	Hs.10175	ESTs Weakly similar to hypothetical protein [H.sapiens]	
17463	2	AA121338		EST - RC_AA121338	
28949	2	F03032	Hs.65826	ESTs Weakly similar to reverse transcriptase homolog [H.sapiens]	
34140	2	AA215637	Hs.104186	ESTs	

## FIGURE 7 (CONT.)

7465	2	AA120886	EST - AA120886
17376	2	AA102425	EST - RC_AA102425
5130	2	U79288	Hs.85053 Homo sapiens clone 24440 mRNA sequence
30041	2	N27628	Hs.132744 Homo sapiens clone 24525 mRNA sequence
19864	2	H48488	ESTs
8166	2	AA359093	EST - AA359093
19202	2	H11509	ESTs
20439	2	N50785	ESTs
10431	2	AA011310	ESTs
29707	2	H98244	ESTs
39868	2	H37909	ESTs
8988	2	C00185	ESTs
41350	2	R40442	Hs.10444
13121	2	AA436156	Hs.75652 Glutathione S-transferase M5
15747	2	W88550	ESTs
18674	2	F03989	ESTs
914	2	HG1019-	ESTs Weakly similar to KIAA0412 [H.sapiens]
23804	2	T91086	EST - HG1019-HT1019
26556	2	AA279089	EST - RC_T91086
8567	2	AA453381	ESTs
30457	2	N47886	ESTs
21975	2	R45441	Hs.104900 ESTs
17452	2	AA120766	Human RACH1 (RACH1) mRNA complete cds
31958	2	N63495	ESTs
31495	2	N69850	ESTs
32490	2	T16389	ESTs
39174	2	AA621067	Human RNA-binding protein CUG-BP/hNab50 (NAB50) mRNA complete cds
21572	2	R34073	ESTs
15914	2	Y09846	Zinc finger protein 136 (clone pHz-20)
12014	2	AA281769	Hs.81972 V-ski avian sarcoma viral oncogene homolog
39777	2	H18412	Hs.7214 Human Hpaat (HPAST) mRNA complete cds
9484	2	H50178	Human clone ID 193225 NAD (H)-specific isocitrate dehydrogenase gamma subunit mRNA alternatively spliced partial cds
19147	2	H09751	ESTs Highly similar to PROTEIN PHOSPHATASE PP2A 55 KD REGULATORY SUBUNIT NEURONAL ISOFORM [Oryctolagus cuniculus]
36276	2	AA424179	ESTs
16475	2	AA025903	ESTs
21304	2	R11208	ESTs
11199	2	AA176446	ESTs
18093	2	AA187955	ESTs
19190	2	H11274	EST
15710	2	W76399	EST - W76399

## FIGURE 7 (CONT.)

18707	2	F04627	Hs.23540	ESTs	
6477	2	X91504	Hs.64904	Transcription factor COUP 2 (a.k.a. ARP1)	
20823	2	N88869	Hs.15119	ESTs	
16386	2	AA018601	Hs.75849	EXTRACELLULAR SIGNAL-REGULATED KINASE 3	
19680	2	H48457	Hs.35104	ESTs	
24833	2	Z41087	Hs.19066	ESTs	
24058	2	W23709	Hs.109047	ESTs	
26180	2	AA251230	Hs.112272	ESTs	
37177	2	AA447988	Hs.7765	ESTs	
14047	2	AA482597	Hs.26054	ESTs	
10770	2	AA058683	Hs.22552	ESTs	
41994	2	T47601	Hs.138805	ESTs	
19217	2	H12243	EST - RC_H12243		
36532	2	AA429889	Hs.68882	Acrosin	
23378	2	T60072	Hs.10688	ESTs	
1450	2	J03071	Hs.115352	Growth hormone 1	
8007	2	AA293072	Hs.97283	ESTs Moderately similar to III; ALU CLASS B WARNING ENTRY III; [H.sapiens]	
17266	2	AA084723	EST - RC_AA084723		
24819	2	Z40923	Hs.24812	ESTs	
6532	2	X95325	Hs.89491	DNA-BINDING PROTEIN A	
26850	2	AA287651	Hs.86641	ESTs	
34175	2	AA227523	Hs.108788	ESTs	
34620	2	AA282169	EST - RC_AA282169		
27085	2	AA402495	Hs.77978	ESTs	
20173	2	N24730	Hs.15420	ESTs	
17574	2	AA129060	EST - RC_AA129060		
22330	2	R60920	Hs.26419	Homo sapiens clone 24510 mRNA sequence	
30070	2	N29896	Hs.44076	EST	
20487	2	N52322	Hs.19978	ESTs	
724	2	D83703	Hs.30729	Peroxisomal biogenesis factor 6	
4132	2	U27655	Hs.82294	Human RGP3 mRNA complete cds	
8557	2	AA452705	Hs.23954	ESTs Weakly similar to D2045.9 [C.elegans]	
33659	2	W95626	Hs.59718	EST	
13375	2	AA449716	Hs.5723	ESTs	
30891	2	N57007	Hs.94074	EST	
13988	2	AA480045	Hs.7934	ESTs	
22306	2	R59906	Hs.100530	ESTs	
23167	2	T33164	Hs.12840	Homo sapiens germline mRNA sequence	
20873	2	N70134	Hs.31476	ESTs	
7231	2	AA059327	Hs.6580	Homo sapiens clone 23718 mRNA sequence	

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## FIGURE 7 (CONT.)

24562	2	Z38752	Hs.26330	ESTs	
11320	2	AA213667	Hs.22222	ESTs	
16388	2	AA020781	Hs.60847	ESTs	
24608	2	Z38888	Hs.25046	ESTs	
7809	2	AA248085	Hs.12469	Homo sapiens clone 23930 mRNA sequence	
13163	2	AA437225	Hs.22410	ESTs	
20549	2	N54991	Hs.37991	ESTs Weakly similar to transposon LRE2 reverse transcriptase homolog [H.sapiens]	
1139	2	HG3227-	EST - HG3227-HT3404		
35572	2	AA401489	EST - RC_AA401489		
6964	2	Z49105	Hs.137591	H.sapiens HD21 mRNA	
27704	2	AA449704	Hs.77637	Homo box A4	
33196	2	W69725	Hs.10711	ESTs	
30963	2	N59373	Hs.26812	ESTs	
13886	2	AA476937	Hs.24441	ESTs	
16164	2	AA007509	Hs.75395	Human mRNA for TPRD complete cds	
18083	2	AA181925	Hs.70954	Homo sapiens mRNA for boxA7 protein	
20107	2	N21207	Hs.129942	ESTs Moderately similar to RETROVIRUS-RELATED POLYPROTEIN [Mus musculus]	
23004	2	T16556	Hs.6653	ESTs	
16238	2	AA011678	Hs.40470	ESTs	
18189	2	AA195042	Hs.85978	ESTs	
37567	2	AA457377	EST - RC_AA457377		
2174	2	L42611	Hs.111758	KERATIN TYPE II CYTOSKELETAL 6D	
38958	2	AA609707	Hs.112751	ESTs	
37919	2	AA478162	Hs.104965	ESTs	
28905	2	D81123	Hs.57475	ESTs	
33315	2	W74418	Hs.55410	ESTs	
7421	2	AA095600	EST - AA095600		
3745	2	UC9117	Hs.80776	Human phospholipase c delta 1 mRNA complete cds	
19545	2	H37834	Hs.32569	ESTs	
21204	2	R07632	Hs.17949	ESTs	
8416	2	AA428531	EST - AA428531		
17569	2	AA128926	EST - RC_AA128926		
19572	2	H39195	Hs.22223	ESTs	
22760	2	R93714	Hs.33833	ESTs Highly similar to ALPHA-2-MACROGLOBULIN PRECURSOR [Homo sapiens]	
19354	2	H18929	Hs.121515	ESTs	
40618	2	N39565	Hs.108540	ESTs	
29913	2	N23708	Hs.43429	ESTs	
22571	2	R78565	Hs.138395	EST	
7598	2	AA174185	Hs.3354	Homo sapiens ezrin-radixin-moesin binding phosphoprotein-50 mRNA complete cds	
25385	2	AA059099	Hs.109727	ESTs	

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## FIGURE 7 (CONT.)

14176	2	AA490620	Hs.11809	ESTs	
37400	2	AA453578	Hs.120994	ESTs Weakly similar to T20D3.5 [C.elegans]	
29487	2	H85120	Hs.80881	N-ACETYL LACTOSAMINE SYNTHASE	
10197	2	R64199	Hs.50785	Homo sapiens vesicle trafficking protein sec22b mRNA complete cds	
322	2	D21241		EST - D21241_xpt1	
22224	2	R55192	Hs.25689	ESTs	
19488	2	H27675	Hs.25604	ESTs	
10568	2	AA029703	Hs.36574	ESTs	
10872	2	AA099357	Hs.15780	ESTs Moderately similar to ATP-BINDING CASSETTE TRANSPORTER 2 [Mus musculus]	
29987	2	N26172	Hs.43760	ESTs	
30799	2	N53143	Hs.64001	ESTs	
9638	2	L07592	Hs.106415	Human peroxisome proliferator activated receptor mRNA complete cds	
21089	2	N98461	Hs.17706	ESTs	
27195	2	AA411473	Hs.65311	ESTs	
9241	2	D79565		EST - D79565	
9218	2	D61469	Hs.56896	ESTs	
22238	2	R55763	Hs.107287	ESTs	
7512	2	AA136369		EST - AA136369	
17438	2	AA115508	Hs.2780	Jun D proto-oncogene	
24932	2	AFFX-		AFFX-HSAC07/X00351_M	
28911	2	F01525	Hs.3786	Glutamate receptor metabotropic 3	
10944	2	AA125969	Hs.34769	ESTs Weakly similar to F35G12.9 [C.elegans]	
42324	2	T98199	Hs.142702	ESTs	
34756	2	AA287665	Hs.8245	ESTs	
12743	2	AA421050	Hs.24545	ESTs	
21275	2	R10075	Hs.14890	ESTs	
13676	2	AA459389	Hs.26350	Homo sapiens mRNA for tyrosyl sulfotransferase-2	
13009	2	AA430474	Hs.16466	ESTs	
7403	2	AA094921	Hs.79788	ESTs	
11151	2	AA159561	Hs.25819	ESTs	
35669	2	AA404707	Hs.54865	ESTs	
17701	2	AA135941	Hs.71626	ESTs	
18713	2	F04686	Hs.21782	ESTs	
24144	2	W52312	Hs.30303	ESTs Highly similar to ZINC FINGER PROTEIN 45 [Homo sapiens]	
30741	2	N52175	Hs.22222	ESTs	
23042	2	T23433	Hs.7105	ESTs	
18479	2	AA234483	Hs.87159	ESTs	
8314	2	AA410355	Hs.103081	ESTs Highly similar to RIBOSOMAL PROTEIN S6 KINASE [Homo sapiens]	
7990	2	AA291786	Hs.32822	ESTs Weakly similar to HYPOTHETICAL PROTEIN KIAA0168 [H.sapiens]	
10388	2	AA005355		EST - RC_AA005355	

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## FIGURE 7 (CONT.)

9407	2	H20086	EST - H20086	
42791	2	AFFX-	AFFX-HUMGAPDH/M33197_M	
26302	2	AA255470	ESTs	
30722	1	N51924	ESTs	
24965	1	AFFX-	AFFX-LysX-5	
38850	1	AA609262	EST - RC_AA609262	
13746	1	AA461300	ESTs	
6893	1	Z30843	H.sapiens mRNA for chloride channel (putative) 2139bp	
31403	1	N68117	ESTs	
17830	1	AA152312	ESTs	
10583	1	AA033874	ESTs	
20913	1	N72116	Natural resistance-associated macrophage protein 2	
35607	1	AA402267	ESTs Weakly similar to zinc finger protein [H.sapiens]	
9920	1	N44756	ESTs Weakly similar to transformation-related protein [H.sapiens]	
9468	1	H48074	ESTs	
29469	1	H82929	EST - RC_H82929	
18121	1	AA191310	Protein phosphatase 2 (formerly 2A) regulatory subunit A (PR 65) beta isoform	
14705	1	D59362	EST - RC_D59362	
18692	1	F04444	ESTs	
16543	1	AA029430	EST	
16359	1	AA019197	ESTs	
40818	1	N63772	Homo sapiens DNA sequence from PAC 434O14 on chromosome 1q32.3-41. Contains the HSD11B1 gene for Hydroxysteroid (11-beta) Dehydro	
35205	1	AA398161	ESTs	
7831	1	AA249175	ESTs Weakly similar to GOLIATH PROTEIN [Drosophila melanogaster]	
17794	1	AA150260	EST	
11347	1	AA224245	ESTs	
17919	1	AA161125	EST	
22184	1	R53520	ESTs	
14827	1	T35288	ESTs	
28091	1	AA481788	ESTs	
28815	1	D59267	ESTs	
17813	1	AA151480	ESTs	
24655	1	Z39191	ESTs Weakly similar to Lph17p [S.cerevisiae]	
15611	1	W51743	ESTs	
39998	1	H62865	ESTs	
15700	1	W73859	Homo sapiens mesoderm-specific basic-helix-loop-helix protein (POD1) mRNA complete cds	
22045	1	R48965	EST	
36770	1	AA435753	EST - RC_AA435753	
9877	1	N31127	ESTs	
22467	1	R68284	ESTs	

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## FIGURE 7 (CONT.)

32400	1	R97176	Hs.110783	ESTs	
10802	1	AA069425	Hs.20573	ESTs	
23033	1	T17353	Hs.108894	Homo sapiens clone 23918 mRNA sequence	
17593	1	AA129856	EST - RC_AA129856	EST - RC_AA129856	
14867	1	T58588	Hs.100419	ESTs	
20266	1	N32118	Hs.107365	ESTs Highly similar to THREONYL-TRNA SYNTHETASE CYTOPLASMIC [Homo sapiens]	
14447	1	AA609045	Hs.11759	ESTs	
37994	1	AA479919	EST - RC_AA479919	EST - RC_AA479919	
12892	1	AA426521	Hs.18528	Homo sapiens mRNA for NA14 protein	
11970	1	AA280687	Hs.4069	ESTs	
19738	1	H53059	Hs.15548	ESTs	
14471	1	AA609346	Hs.20102	ESTs	
14855	1	T54762	Hs.9786	ESTs	
24725	1	Z39781	Hs.8004	Homo sapiens Duo mRNA complete cds	
5796	1	X55019	Hs.99975	Cholinergic receptor nicotinic delta polypeptide	
20259	1	N31598	Hs.12727	ESTs	
18441	1	AA232508	Hs.77480	ESTs	
18468	1	AA233177	Hs.87134	ESTs	
10164	1	R54743	Hs.19400	ESTs Weakly similar to MITOTIC MAD2 PROTEIN [S.cerevisiae]	
8830	1	AB002319	Hs.8663	Human mRNA for KIAA0321 gene partial cds	
15287	1	W07461	Hs.121559	ESTs Highly similar to DIPHTHINE SYNTHASE [Saccharomyces cerevisiae]	
16477	1	AA026031	Hs.61312	ESTs	
21969	1	R45334	Hs.21175	ESTs	
22340	1	R61522	Hs.26892	ESTs	
12884	1	AA426259	EST - RC_AA426259	EST - RC_AA426259	
8682	1	AA477891	Hs.104476	ESTs	
22594	1	R79793	Hs.29900	ESTs	
19131	1	H09331	Hs.122791	ESTs	
17103	1	AA074997	EST - RC_AA074997	EST - RC_AA074997	
35620	1	AA402493	Hs.10552	ESTs Highly similar to c-Jun leucine zipper interactive [M.musculus]	
35401	1	AA399593	Hs.97682	EST	
10901	1	AA112307	Hs.25224	ESTs	
19546	1	H37901	Hs.32706	ESTs	
15378	1	W26448	Hs.15071	ESTs Highly similar to VACUOLAR ATP SYNTHASE SUBUNIT D [Bos taurus]	
30292	1	N35978	Hs.82384	ESTs	
39087	1	AA620607	Hs.111591	ESTs	
37896	1	AA477463	Hs.77039	Ribosomal protein S28	
8836	1	AB002325	Hs.105917	Human mRNA for KIAA0327 protein complete cds	
16150	1	AA005428	Hs.60140	ESTs	
23955	1	T97467	Hs.18065	ESTs Weakly similar to alternatively spliced product using exon 13A [H.sapiens]	

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## FIGURE 7 (CONT.)

37812	1	AA469939	Hs.105323	ESTs	
14782	1	S72370	Hs.89890	Pyruvate carboxylase	
23540	1	T79178	Hs.14463	ESTs	
41552	1	R59352	Hs.101253	Human mRNA for KIAA0296 gene complete cds	
21836	1	R42569	Hs.22444	EST	
11467	1	AA234089	Hs.14593	ESTs	
18347	1	AA219230	Hs.86815	ESTs	
8215	1	AA389673	Hs.84344	ESTs Weakly similar to No definition line found [C.elegans]	
15505	1	W28366	Hs.7252	Homo sapiens clone 24800 mRNA sequence	
22794	1	R93802	Hs.33687	ESTs	
14966	1	U07620	Hs.89661	Human MAP kinase mRNA complete cds	
24213	1	W69184	Hs.23973	ESTs	
8165	1	AA358888	Hs.104135	Homo sapiens mRNA for DRIM protein	
32724	1	T90750	Hs.15230	ESTs Weakly similar to F25H2.2 [C.elegans]	
8212	1	AA386236	Hs.96757	Homo sapiens transcription factor SUPT3H (SUPT3H) mRNA complete cds	
9834	1	M92299	Hs.22554	Homo sapiens clone 23565 unknown mRNA partial cds	
7229	1	AA059213	Hs.91898	ESTs	
15649	1	W58725	Hs.75074	H.sapiens mRNA for MAP kinase activated protein kinase	
42306	1	T96538	Hs.45090	Human K <sup>+</sup> channel beta 1a subunit mRNA alternatively spliced complete cds	
9159	1	D31483	Hs.90062	Homo sapiens clone 23565 unknown mRNA partial cds	
20040	1	H96712	Hs.125198	ESTs	
42218	1	W86444	Hs.110095	ESTs	
15526	1	W28790	Hs.8124	ESTs	
17790	1	AA150182	Hs.42262	ESTs Weakly similar to HYPOTHETICAL 88.1 KD PROTEIN K02D10.1 IN CHROMOSOME III [C.elegans]	
17595	1	AA129929	Hs.71166	EST	
31314	1	N68666	Hs.49278	EST	
9777	1	M57888	Hs.95946	GRANZYME H PRECURSOR	
13373	1	W26376	Hs.74563	THY-1 MEMBRANE GLYCOPROTEIN PRECURSOR	
23547	1	T79448	Hs.14577	EST	
12076	1	AA284362	Hs.6448	ESTs Weakly similar to No definition line found [C.elegans]	
17956	1	AA279991	Hs.124691	ESTs	
15391	1	W26651	Hs.15961	ESTs	
9287	1	D82557	Hs.18104	ESTs	
16419	1	AA022466	Hs.61141	EST	
21713	1	R39930	Hs.21034	ESTs	
12905	1	AA427537	Hs.32419	ESTs	
30257	1	N34961	Hs.75873	H.sapiens mRNA for Zyxlin	
28134	1	AA487622	Hs.64095	ESTs	
16380	1	AA019750	Hs.40797	ESTs Weakly similar to LINE-1 REVERSE TRANSCRIPTASE HOMOLOG [H.sapiens]	
10553	1	AA028904	Hs.33215	ESTs	

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## FIGURE 7 (CONT.)

18063	1	AA180054	Hs.73677	ESTs	
39820	1	H24085	Hs.25443	ESTs	
7374	1	AA093378	Hs.101810	ESTs	
13109	1	AA435838	Hs.7985	ESTs	
19378	1	H19673	Hs.31670	ESTs	
24325	1	W64733	Hs.3978	ESTs	
22318	1	R60224	Hs.7065	ESTs	
24249	1	W73069	Hs.12600	ESTs	
16514	1	AA027946	Hs.44608	ESTs	
21421	1	R21741	Hs.23258	EST	
8397	1	AA426178	Hs.71725	ESTs	Weakly similar to !!!!! ALU SUBFAMILY SQ WARNING ENTRY !!!!! [H.sapiens]
8412	1	AA428090	Hs.26102	ESTs	
10072	1	R14782	Hs.31931	ESTs	
10349	1	AA001908	Hs.18180	ESTs	
14492	1	AA609635	Hs.27497	ESTs	
14930	1	T92512		EST - T92512	
15861	1	X81001	Hs.141503	Small inducible cytokine A5 (RANTES)	
16706	1	AA043800	Hs.62645	ESTs	
16744	1	AA045643	Hs.62866	EST	
16950	1	AA062980	Hs.66960	ESTs	
17836	1	AA155779	Hs.29759	ESTs	Weakly similar to !!!!! ALU SUBFAMILY SX WARNING ENTRY !!!!! [H.sapiens]
18834	1	F10207	Hs.13289	ESTs	
19178	1	H10992	Hs.100910	EST	
19767	1	H54720	Hs.36941	ESTs	
21341	1	R14959	Hs.21871	EST	Moderately similar to ninein [M.musculus]
21466	1	R24518	Hs.23674	EST	
21602	1	R36624	Hs.135137	ESTs	
21748	1	R40697	Hs.21290	EST	
21860	1	R43089		EST - RC_R43089	
21891	1	R43590	Hs.13290	ESTs	
21937	1	R44508	Hs.22653	ESTs	
22006	1	R46244	Hs.23110	ESTs	
22054	1	R49116	Hs.25067	EST	
22222	1	R55042	Hs.106645	ESTs	
22292	1	R59385	Hs.141053	Homo sapiens bestrophin (VMD2) mRNA alternatively spliced product complete cds	
22383	1	R63463	Hs.23282	ESTs	
22446	1	R67259	Hs.25968	EST	
23103	1	T23939	Hs.7344	ESTs	
23872	1	T94562	Hs.17338	EST	
24291	1	W80642	Hs.16951	ESTs	

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## FIGURE 7 (CONT.)

24640	1	Z39086	Hs.21403	ESTs	
27519	1	AA435835	Hs.90595	ESTs	
32067	1	R06424	Hs.64896	ESTs	
32204	1	R44210	Hs.91440	EST	
32692	1	T79942	Hs.90930	ESTs	
33714	1	Z39430	Hs.65749	ESTs	
33733	1	Z39668	Hs.65792	ESTs	
33873	1	AFFX-	AFFX-DapX-3		
35434	1	AA400034	Hs.97769	EST	
35950	1	AA412498	Hs.104778	ESTs	
36483	1	AA428865	Hs.98593	EST	
36615	1	AA431469	Hs.98737	ESTs	
37329	1	AA452138	Hs.3781	Homo sapiens BAC clone RG118D07 from 7q31	
37700	1	AA461090	Hs.124826	EST	
38285	1	AA489840	Hs.105302	ESTs	
38887	1	AA609422	Hs.112705	EST	
38933	1	AA609606	Hs.112732	ESTs	
39894	1	H42037	Hs.144150	ESTs	
40244	1	H91680	Hs.30250	Homo sapiens short form transcription factor C-MAF (c-maf) mRNA complete cds	
40645	1	N47952	Hs.102624	EST	
40819	1	N63787	Hs.109304	ESTs	
41445	1	R45611	Hs.137696	ESTs Weakly similar to IIII ALU SUBFAMILY SQ WARNING ENTRY IIIII [H.sapiens]	
41700	1	R85829	Hs.101883	EST	
41776	1	T03170	Hs.100165	EST	
13254	1	AA446587	Hs.6775	ESTs Highly similar to ALANINE AMINOTRANSFERASE [Homo sapiens]	
8171	1	AA362708	Hs.5009	ESTs Weakly similar to mTERF [H.sapiens]	
23030	1	T17291	Hs.6995	ESTs	
8406	1	AA427510	Hs.104287	ESTs	
16767	1	AA046650	Hs.40342	ESTs	
25010	1	AA005315	Hs.51262	ESTs	
14829	1	T35529	EST - T35529		
34584	1	AA280934	Hs.132872	ESTs Moderately similar to IIIII ALU SUBFAMILY SC WARNING ENTRY IIIII [H.sapiens]	
15909	1	Y07868	Hs.38842	H.sapiens mRNA for Pltin isolate 1	
9922	1	N44971	Hs.107164	Spectrin beta non-erythrocytic 1	
15381	1	W26496	Hs.107725	ESTs Weakly similar to LIS-1 protein [H.sapiens]	
22168	1	R53024	Hs.25985	ESTs	
11690	1	AA252762	Hs.31235	ESTs	
22999	1	T16510	Hs.6624	ESTs	
24490	1	Z38153	Hs.26921	ESTs	
19993	1	H81255	Hs.15227	ESTs	

## FIGURE 7 (CONT.)

19689	1	H48825	Hs.35291	ESTs	
12450	1	AA401809	Hs.19865	ESTs	
24368	1	W87260	Hs.124800	ESTs	
22565	1	R77631	Hs.29126	ESTs	
18872	1	F10542	Hs.12292	ESTs	
15358	1	W26105	Hs.8961	ESTs	
24186	1	W61319	Hs.37482	ESTs	Highly similar to COATOMER ZETA SUBUNIT [Bos taurus]
23863	1	T93870	Hs.17265	ESTs	
23846	1	T93078	Hs.17117	EST	
15143	1	U79257	Hs.86921	Human clone 23932 mRNA sequence	
9711	1	L44334	Hs.10432	ESTs	Weakly similar to BENOMYLIMETHOTREXATE RESISTANCE PROTEIN [Candida albicans]
22544	1	R74235	Hs.80844	Homo sapiens mRNA for KIAA0573 protein partial cds	
41506	1	R52088		EST - RC_R52088	
39345	1	C21105	Hs.7768	Homo sapiens FGF-1 intracellular binding protein (FIBP) mRNA complete cds	
22272	1	R56922	Hs.26590	ESTs	
16434	1	AA024494	Hs.61199	ESTs	
17255	1	AA084412		EST - RC_AA084412	
22692	1	R88711	Hs.34183	ESTs	
38830	1	AA609189	Hs.116415	ESTs	
9179	1	D50312	Hs.102308	Human mRNA for uKATP-1 complete cds	
42547	1	W73946		EST - RC_W73946	
36195	1	AA421144		EST - RC_AA421144	
29355	1	H70121	Hs.79592	ESTs	
34608	1	AA281765	Hs.104441	ESTs	
20779	1	N67553	Hs.15917	ESTs	
11081	1	AA149826	Hs.34274	ESTs	
12151	1	AA291269	Hs.24642	ESTs	
39935	1	H52379		EST - RC_H52379	
7157	1	AA037199	Hs.9899	ESTs	
17858	1	AA156596	Hs.72146	ESTs	
34885	1	AA302831	Hs.57732	Homo sapiens p38beta2 MAP kinase mRNA complete cds	
18445	1	AA232648	Hs.87068	ESTs	
22524	1	R72597		EST - RC_R72597	
19224	1	H12448	Hs.124570	ESTs	Weakly similar to unknown protein [H.sapiens]
18803	1	F09988	Hs.5244	ESTs	
13810	1	AA464689	Hs.23294	ESTs	Weakly similar to weak similarity to HSP90 [C.elegans]
18070	1	AA180352	Hs.72733	ESTs	
17937	1	AA164750	Hs.72499	ESTs	
39115	1	AA620736	Hs.112893	EST	
22517	1	R71892	Hs.25996	ESTs	Highly similar to 40S RIBOSOMAL PROTEIN S27A [Homo sapiens Cavia porcellus]

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## FIGURE 7 (CONT.)

16906	1	AA058555	Hs.63392	EST	
14251	1	AA497049	Hs.32501	ESTs	
23923	1	T96407	Hs.17812	ESTs	
21177	1	R06589	Hs.19721	ESTs	
25705	1	AA131921	Hs.71030	ESTs	
19605	1	H57725	Hs.124031	ESTs	
19668	1	H47656	Hs.33991	EST	
36693	1	AA432389	Hs.98702	ESTs	
14036	1	AA482107	Hs.5473	ESTs	
20859	1	N69825	Hs.16762	ESTs	
23849	1	T93113		EST - RC_T93113	
18265	1	AA207122	Hs.86316	ESTs	
35275	1	AA398530	Hs.97363	ESTs	
10282	1	R77869	Hs.110493	ESTs	
21757	1	R40789	Hs.21299	ESTs	
21541	1	R31607	Hs.24420	ESTs	
16873	1	AA056258	Hs.63264	EST	
19646	1	H46006	Hs.31677	ESTs	
23719	1	T89160	Hs.138506	ESTs	
19608	1	H41581	Hs.31592	ESTs	Moderately similar to HYPOTHETICAL 59.1 KD PROTEIN ZK637.1 IN CHROMOSOME III [Caenorhabditis elegans]
17382	1	AA102731	Hs.109072	ESTs	
16864	1	AA055971	Hs.63238	ESTs	
10697	1	AA111881	Hs.9192	ESTs	
17028	1	AA070178		EST - RC_AA070178	
19220	1	H12318	Hs.24324	ESTs	
9726	1	L44574	Hs.125235	ESTs	
24570	0	Z38681	Hs.27150	ESTs	
22167	0	R53021	Hs.25873	ESTs	
42537	0	W73417	Hs.103183	EST	
18806	0	F10005	Hs.12599	ESTs	
16585	0	AA033948	Hs.4236	ESTs	
17309	0	AA086232	Hs.68717	EST	Moderately similar to mariner transposase [H.sapiens]
22813	0	R97419	Hs.35718	ESTs	
16429	0	AA022953	Hs.61172	EST	
22013	0	R48526	Hs.25377	EST	
8439	0	AA431277	Hs.32419	ESTs	
22934	0	T10042	Hs.4205	ESTs	
13053	0	AA432386	Hs.1151	Human mRNA for KIAA0073 gene partial cds	
10122	0	R31745		EST - R31745	
18195	0	AA195263	Hs.86001	EST	



## FIGURE 7 (CONT.)

33249	0	W72557	Hs.57836	ESTs
16966	0	AA063378	Hs.144270	ESTs
18363	0	AA223929	Hs.86902	EST
34154	0	AA219304	Hs.74561	ALPHA-2-MACROGLOBULIN PRECURSOR
16222	0	AA011210	Hs.95044	ESTs
17174	0	AA079306		EST - RC_AA079306

Primary Key	Fold upregulated of Tumor over normal colon	Accession	Unigene Descriptor	ORF structural info
16074	>10	AA01507	ESTs	other
25047	>10	AA011031	ESTs	other
25082	>10	AA017257	ESTs	other
16490	>10	AA026418	ESTs	other
25179	>10	AA031268	H.sapiens mRNA for kinesin-2	other
25215	>10	AA035540	APOLIPOPROTEIN AI REGULATORY PROTEIN-1	other
25282	>10	AA044825	ESTs	other
16810	>10	AA053636	ESTs	other
16835	>10	AA054438	ESTs	SS,
10747	>10	AA055841	ESTs	other
10748	>10	AA055892	ESTs	other
16993	>10	AA065300	Human mRNA for KIAA0035 gene partial cds	other
17051	>10	AA070801	ESTs	TM
10840	>10	AA084104	ESTs	other
7296	>10	AA085661	ESTs	other
7325	>10	AA090842	ESTs Weakly similar to HYPOTHETICAL 36.7 KD PROTEIN C2F7.02C IN CHROMOSOME I [Schizosaccharomyces pombe]	other
17419	>10	AA113349	EST	?
17541	>10	AA127459	ESTs	other
17559	>10	AA128407	ESTs	other
25669	>10	AA128978	ESTs	?
17600	>10	AA130596	ESTs	other
10992	>10	AA132523	Homo sapiens BAC clone RG119C02 from 7p15	other
17654	>10	AA133250	ESTs	TM
17734	>10	AA137246	ESTs	other
25801	>10	AA148530	EST - RC_AA148530	TM
25806	>10	AA149007	EST	?
11121	>10	AA156359	Human TAR DNA-binding protein-43 mRNA complete cds	?
11160	>10	AA164289	ESTs	other
25925	>10	AA164494	ESTs Weakly similar to CYCLIC-AMP-DEPENDENT TRANSCRIPTION FACTOR ATF-6 [H.sapiens]	other
25934	>10	AA165355	Human clone iota unknown protein mRNA complete cds	?
17987	>10	AA169379	ESTs	other
18008	>10	AA171895	Homo sapiens clone 24749 and 24750 mRNA sequences	TM
33953	>10	AA173290	Human HOXA1 mRNA long transcript and alternatively spliced forms complete cds	other
33980	>10	AA180223	CAMP-DEPENDENT PROTEIN KINASE TYPE II- ALPHA REGULATORY CHAIN	other
34013	>10	AA190888	EST - RC_AA190888	other
34014	>10	AA191348	ESTs	other
34015	>10	AA191353	ESTs	TM
34070	>10	AA196549	ESTs	other
18260	>10	AA206801	ESTs	?
34105	>10	AA207123	ESTs	SS,
34107	>10	AA209469	ESTs	other
18330	>10	AA216722	Human mRNA for apolipoprotein E receptor 2 complete cds	TM
18362	>10	AA223912	Ribonuclease L (2'5'-oligoadenylate synthetase- dependent) inhibitor	other
18392	>10	AA227751	ESTs	SS,
34188	>10	AA228030	ESTs	TM
34197	>10	AA232315	Homo sapiens clone 23797 and 23917 mRNA partial cds	other
25848	>10	AA234365	Homo sapiens survival of motor neuron protein interacting protein 1 (SIP1) mRNA complete cds	?
25951	>10	AA234556	EST	?

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11561	>10	AA236533	Evi-1	other
26059	>10	AA236685	ESTs	other
26100	>10	AA242835	Human mRNA for KIAA0391 gene complete cds	other
11603	>10	AA243052	ESTs Highly similar to GONADOTROPIN-RELEASING HORMONE RECEPTOR [Rattus norvegicus]	other
7785	>10	AA243375	EST - AA243375	other
34372	>10	AA251973	ESTs	?
26240	>10	AA252282	Human mRNA for KIAA0152 gene complete cds	TM
34382	>10	AA252512	ESTs	other
34391	>10	AA252703	EST - RC_AA252703	other
26274	>10	AA253011	ESTs	?
34400	>10	AA253400	ESTs	other
26291	>10	AA253422	ESTs	?
26355	>10	AA256379	ESTs	other
11813	>10	AA258158	ESTs	other
34518	>10	AA278721	ESTs	?
26545	>10	AA278979	ESTs	other
26574	>10	AA279504	ESTs	other
34554	>10	AA280016	DNA polymerase gamma	other
34561	>10	AA280298	ESTs	TM
26628	>10	AA280641	ESTs Highly similar to 60S RIBOSOMAL PROTEIN L39 [Rattus norvegicus]	TM
11969	>10	AA280670	ESTs	SS
34575	>10	AA280738	ESTs	TM
26677	>10	AA281636	ESTs	?
26700	>10	AA282197	EST	?
34672	>10	AA284372	ESTs	other
34692	>10	AA285079	ESTs	other
12143	>10	AA290991	ESTs	other
8092	>10	AA316272	ESTs	TM
34904	>10	AA321746	EST	other
8111	>10	AA323787	ESTs	other
8125	>10	AA330771	Human protein-tyrosine phosphatase (HU-PP-1) mRNA partial sequence	TM
26916	>10	AA331393	ESTs	other
26926	>10	AA342402	ESTs	other
26935	>10	AA347193	ESTs Weakly similar to NADH-UBIQUINONE OXIDOREDUCTASE CHAIN 4 [Caenorhabditis elegans]	TM
35038	>10	AA350541	ESTs Moderately similar to URACIL-DNA GLYCOSYLASE 1 PRECURSOR [H.sapiens]	TM
35049	>10	AA350857	ESTs	other
35106	>10	AA371561	EST Weakly similar to putative p150 [H.sapiens]	?
35197	>10	AA398120	ESTs	other
35277	>10	AA398536	ESTs	other
35309	>10	AA398660	EST	other
35322	>10	AA398710	H. sapiens RNA for CLCN3	TM
27037	>10	AA400198	ESTs	TM
35495	>10	AA400527	ESTs	?
27046	>10	AA400670	Homo sapiens mRNA for KIAA0582 protein partial cds	other
35500	>10	AA400715	ESTs	other
12480	>10	AA403116	Homo sapiens U-snRNP-associated cyclophilin (USA-CyP) mRNA complete cds	other
35693	>10	AA405485	ESTs Weakly similar to similar to t complex testis-specific protein [C.elegans]	other
35697	>10	AA405512	ESTs	other
35766	>10	AA406169	Homo sapiens KIAA0431 mRNA partial cds	other
35769	>10	AA406206	ESTs	other
35798	>10	AA410231	ESTs	other

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35801	>10	AA410291	ESTs	other
35803	>10	AA410295	ESTs	other
35822	>10	AA411144	ESTs	TM
35874	>10	AA412024	EST	?
35958	>10	AA412550	ESTs	other
36052	>10	AA417027	EST	TM
36258	>10	AA423962	ESTs Weakly similar to !!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]	other
36288	>10	AA424502	ESTs	other
36307	>10	AA424803	EST	?
36371	>10	AA426017	ESTs	TM
36395	>10	AA426353	ESTs	other
36405	>10	AA426406	Homo sapiens mRNA for KIAA0530 protein partial cds	other
36506	>10	AA429610	ESTs	other
36571	>10	AA430726	EST - RC_AA430726	SS,
36695	>10	AA433910	ESTs	other
36739	>10	AA435610	EST - RC_AA435610	?
36753	>10	AA435686	ESTs	other
36845	>10	AA436198	ESTs	?
13138	>10	AA436560	ESTs	SS, TM
13143	>10	AA436619	ESTs	SS,
36958	>10	AA442060	ESTs	other
36962	>10	AA442082	ESTs	?
36981	>10	AA442845	EST	?
13237	>10	AA443971	ESTs Weakly similar to !!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]	?
13242	>10	AA445994	ESTs	other
37057	>10	AA446131	ESTs	other
37068	>10	AA446312	ESTs Weakly similar to !!! ALU CLASS C WARNING ENTRY !!!! [H.sapiens]	other
37074	>10	AA446344	ESTs	SS,
37084	>10	AA446486	Homo sapiens Ran binding protein 2 (RanBP2alpha) mRNA partial cds	?
37135	>10	AA447540	EST	?
37159	>10	AA447714	EST - RC_AA447714	other
37168	>10	AA447772	ESTs	?
37246	>10	AA449311	Homo sapiens mitotic checkpoint protein kinase (BUB1) mRNA complete cds	other
37310	>10	AA451707	ESTs	other
37453	>10	AA454610	ESTs	?
37456	>10	AA454632	ESTs	TM
27787	>10	AA454660	ESTs	?
37492	>10	AA455248	EST - RC_AA455248	other
37546	>10	AA456641	ESTs	TM
37601	>10	AA458864	ESTs	other
37611	>10	AA458996	Human signaling lymphocytic activation molecule (SLAM) mRNA complete cds	SS, TM
37615	>10	AA459101	Human serine/threonine kinase mRNA partial cds	other
37653	>10	AA460017	ESTs	other
37677	>10	AA460530	Homo sapiens orphan G protein-coupled receptor HG38 mRNA complete cds	other
37777	>10	AA464860	Homo sapiens Jak2 kinase mRNA complete cds	other
8648	>10	AA465016	Homo sapiens serine protease-like protease (nes1) mRNA complete cds	?
37816	>10	AA469954	EST	?
37829	>10	AA470084	ESTs	other
28015	>10	AA477421	ESTs	other
37978	>10	AA479294	EST - RC_AA479294	other
37979	>10	AA479295	ESTs Highly similar to RING CANAL PROTEIN [Drosophila melanogaster]	other

FIGURE 8 (cont.)

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37983	>10	AA479348	H sapiens mRNA for SYT	other
14054	>10	AA485223	ESTs	TM
38121	>10	AA485724	EST - RC_AA485724	other
28122	>10	AA485928	ESTs Weakly similar to LOK (M.musculus)	other
38167	>10	AA487207	EST - RC_AA487207	other
38172	>10	AA487424	EST - RC_AA487424	other
38179	>10	AA487492	Homo sapiens clone 23592 mRNA sequence	other
38182	>10	AA487501	ESTs	other
38194	>10	AA487969	ESTs	other
28141	>10	AA488432	ESTs	?
38211	>10	AA488687	ESTs	other
38235	>10	AA489030	ESTs	other
38280	>10	AA489791	EST - RC_AA489791	other
38316	>10	AA490500	Homo sapiens ribonuclease P protein subunit p20 (RPP20) mRNA complete cds	other
38330	>10	AA490882	ESTs	other
38456	>10	AA504343	ESTs	SS,
38460	>10	AA504462	ESTs	other
38553	>10	AA521471	ESTs	other
38580	>10	AA598545	ESTs	?
38590	>10	AA598648	Human mRNA for transcriptional activator hSNF2b complete cds	other
38601	>10	AA598738	ESTs	?
28323	>10	AA598639	ESTs	other
38828	>10	AA609177	ESTs	TM
38838	>10	AA609215	EST - RC_AA609215	?
38867	>10	AA609318	Human cbl-b mRNA complete cds	TM
38871	>10	AA609333	EST	?
38970	>10	AA609749	ESTs	other
38984	>10	AA609839	ESTs Moderately similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]	?
39045	>10	AA610077	ESTs	other
39062	>10	AA620333	EST	?
39080	>10	AA620552	EST - RC_AA620552_f	?
39110	>10	AA620709	ESTs Weakly similar to HYPOTHETICAL 90.8 KD PROTEIN T05H10.7 IN CHROMOSOME II [C.elegans]	other
39176	>10	AA621091	ESTs	other
39218	>10	AA621330	ESTs	other
39221	>10	AA621346	Homo sapiens protein phosphatase with EF-hands-1 (PPEF-1) mRNA complete cds	other
39232	>10	AA621409	ESTs	other
21	>10	AB000905	H.sapiens histone H4 gene	?
8963	>10	AFFX-HUMTFRRM11507	AFFX-HUMTFRRM11507_M	?
33890	>10	AFFX-HUMTFRRM11507	AFFX-HUMTFRRM11507_5	?
39302	>10	C14944	ESTs	other
39329	>10	C20797	EST	?
28844	>10	D12163	ESTs	other
218	>10	D13540	PROTEIN-TYROSINE PHOSPHATASE 2C	other
236	>10	D13645	Human mRNA for KIAA0020 gene complete cds	other
9127	>10	D30037	PHOSPHATIDYLINOSITOL	other
459	>10	D38293	Human mRNA for clathrin-like protein complete cds	TM
39405	>10	D50975	ESTs	other
39433	>10	D52037	Human thymidine kinase 2 (TK2) mRNA complete cds	other
39436	>10	D52692	Human Ca2+-dependent activator protein for secretion mRNA complete cds	TM
14708	>10	D59388	EST	?

FIGURE 8 (cont.)

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39488	>10	D60831	ESTs	other
39504	>10	D80632	ESTs	other
765	>10	D86096	Prostaglandin E receptor 3 (subtype EP3) (alternative products)	?
787	>10	D86969	Human mRNA for KIAA0215 gene complete cds	other
789	>10	D86971	Human mRNA for KIAA0217 gene partial cds	other
39529	>10	F02202	ESTs	?
39535	>10	F02450	ESTs Moderately similar to unknown protein [H.sapiens]	TM
18676	>10	F04022	ESTs	other
18718	>10	F04915	ESTs	other
18762	>10	F09458	ESTs	other
18782	>10	F09739	ESTs	other
29080	>10	F13655	ESTs Moderately similar to !!!! ALU SUBFAMILY SB1 WARNING ENTRY !!!! [H.sapiens]	other
19001	>10	H02890	ESTs	other
19164	>10	H10395	EST	?
39725	>10	H11323	ESTs	other
19203	>10	H11593	ESTs	other
19328	>10	H17808	ESTs	other
19387	>10	H20128	ESTs	?
39787	>10	H20131	ESTs	SS,
19389	>10	H20165	EST	?
39832	>10	H26279	EST - RC_H26279	other
19591	>10	H40688	ESTs	other
29229	>10	H48459	Human mRNA for KIAA0186 gene complete cds	other
19727	>10	H52702	ESTs	?
19787	>10	H56679	ESTs	other
39995	>10	H62474	EST	SS, TM
29331	>10	H68116	ESTs	TM
29344	>10	H68839	EST	?
40064	>10	H72283	Human mRNA for KIAA0265 gene partial cds	other
40083	>10	H73466	MITOCHONDRIAL 60S RIBOSOMAL PROTEIN L3	other
19949	>10	H78263	ESTs	TM
40204	>10	H88296	EST - RC_H88296	other
29523	>10	H88353	ESTs Weakly similar to line-1 protein ORF2 [H.sapiens]	?
29551	>10	H90134	ESTs	?
29645	>10	H95840	ESTs	?
20057	>10	H98079	ESTs	other
976	>10	HG2036-HT2090	EST - HG2036-HT2090	?
1158	>10	HG3344-HT3521	EST - HG3344-HT3521	?
1210	>10	HG37-HT37	EST - HG37-HT37	?
1346	>10	HG4716-HT5158	EST - HG4716-HT5158	?
1349	>10	HG4747-HT5195	EST - HG4747-HT5195	?
1445	>10	J03027	MHC class I protein HLA-G	?
1570	>10	K01383	EST - K01383	?
1684	>10	L07541	Replication factor C (activator 1) 3 (38kD)	other
1852	>10	L17328	Human FEZ2 mRNA partial cds	TM
1856	>10	L18920	MELANOMA-ASSOCIATED ANTIGEN 2	?
1863	>10	L19181	TRANSLATIONAL INITIATION FACTOR 2 GAMMA SUBUNIT	other
2070	>10	L37378	Homo sapiens guanylyl cyclase (RelGC-2) mRNA complete cds	SS, TM
2123	>10	L40396	Homo sapiens (clone s22i71) mRNA fragment	other
2144	>10	L41349	Phospholipase C beta 4	SS,
9723	>10	L44542	ESTs	other
2188	>10	L47276	EST - L47276	other

FIGURE 8 (cont.)

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2343	>10	M15353	Eukaryotic translation initiation factor 4E	other
2627	>10	M29610	Glycophorin E	TM
2857	>10	M58597	Fucosyltransferase 4 (alpha (13) fucosyltransferase myeloid-specific)	TM
3021	>10	M68841	Protein tyrosine phosphatase non-receptor type 4	other
3163	>10	M84424	Cathepsin E	?
3196	>10	M86917	Oxysterol binding protein	other
20088	>10	N20054	ESTs Weakly similar to putative p150 [H.sapiens]	?
29795	>10	N20641	ESTs Highly similar to HYPOTHETICAL MYELOID CELL LINE PROTEIN 3 [Homo sapiens]	other
40427	>10	N21147	ESTs	other
40444	>10	N22140	ESTs Highly similar to TUBULIN GAMMA CHAIN [Euplates octocarinatus]	other
29893	>10	N23003	ESTs	TM
40498	>10	N26086	Homo sapiens citrate synthase mRNA complete cds	SS.
40559	>10	N33024	ESTs	SS.
30190	>10	N33264	EST	?
30207	>10	N33920	H.sapiens mRNA for diubiquitin	other
20304	>10	N34686	Homo sapiens clone 23915 mRNA sequence	?
20307	>10	N34830	ESTs	other
30265	>10	N35115	ESTs	other
40594	>10	N35388	ESTs	other
40604	>10	N38893	Homo sapiens KIAA0428 mRNA complete cds	other
40631	>10	N45124	ESTs	other
40660	>10	N49104	NUCLEAR FACTOR RIP140	other
30610	>10	N50138	EST	?
30617	>10	N50646	ESTs	other
30631	>10	N50807	EST	?
30790	>10	N52935	EST	?
20564	>10	N55443	ESTs	TM
40760	>10	N57927	ESTs Weakly similar to ELL [M.musculus]	other
30938	>10	N58561	Cathepsin B	other
20614	>10	N59230	ESTs	SS.
20657	>10	N62889	ESTs	other
31136	>10	N63512	ESTs Weakly similar to M01F1.4 [C.elegans]	TM
40827	>10	N64051	Homo sapiens Werner syndrome gene complete cds	other
31310	>10	N66831	EST	?
40876	>10	N67607	Human Rho-associated coiled-coil containing protein kinase p160ROCK mRNA complete cds	other
20791	>10	N68057	Homo sapiens telomeric repeat binding factor (TRF1) mRNA complete cds	?
40905	>10	N68738	ESTs	other
40911	>10	N69114	H.sapiens mRNA for orphan nuclear hormone receptor	other
40913	>10	N69218	ESTs	other
31484	>10	N69466	ESTs	other
31619	>10	N73449	ESTs	other
41005	>10	N79516	ESTs	TM
31818	>10	N89774	Homo sapiens mRNA for KIAA0292 gene partial cds	other
31872	>10	N91109	EST	other
41040	>10	N91948	ESTs	other
31944	>10	N93193	ESTs	other
41065	>10	N93618	ESTs	other
32034	>10	N98926	ESTs Moderately similar to DMR-N9 PROTEIN [H.sapiens]	other
41107	>10	R01634	ESTs	other
41163	>10	R08176	ESTs	other
21238	>10	R08564	Plasminogen-like protein	other

FIGURE 8 (cont.)

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21240	>10	R08613	ESTs	other
21412	>10	R20670	ESTs	other
21519	>10	R27975	EST - RC_R27975	other
41381	>10	R42278	H sapiens mRNA for TRE5	?
32189	>10	R43183	ESTs	TM
32195	>10	R43471	ESTs Weakly similar to ORF YOR258w [S.cerevisiae]	other
21902	>10	R43822	EST	?
21946	>10	R44707	ESTs	TM
22072	>10	R49406	ESTs	?
32240	>10	R50976	Ribonuclease L (2'5'-oligoadenylate synthetase-dependent) inhibitor	other
32258	>10	R55623	ESTs	other
22258	>10	R56432	ESTs	other
22282	>10	R59197	ESTs	other
32277	>10	R61493	Human mRNA for rod photoreceptor protein complete cds	other
22372	>10	R62831	EST	?
22400	>10	R64109	ESTs	other
41593	>10	R64129	ESTs	other
10233	>10	R71427	ESTs Highly similar to PHENYLALANYL-TRNA SYNTHETASE ALPHA CHAIN CYTOPLASMIC [Saccharomyces cerevisiae]	other
41654	>10	R76437	THROMBOXANE-A SYNTHASE	TM
22557	>10	R76722	ESTs	other
22576	>10	R79111	ESTs	other
22593	>10	R79777	EST	?
41678	>10	R80675	EST	?
41719	>10	R89260	EST - RC_R89260	other
22793	>10	R96208	ESTs	other
41752	>10	R97063	ESTs	other
3375	>10	S50223	HKR-T1	other
3406	>10	S66896	SQUAMOUS CELL CARCINOMA ANTIGEN 1	other
3522	>10	S80267	Spleen tyrosine kinase	other
41793	>10	T03887	ESTs	?
23198	>10	T40530	ESTs Weakly similar to B0035.14 [C.elegans]	other
23360	>10	T58531	ESTs	other
32635	>10	T61116	ESTs	other
42177	>10	T79786	ESTs	?
23623	>10	T84047	ESTs	?
23662	>10	T86674	ESTs	other
42242	>10	T89579	Homo sapiens E2F-related transcription factor (DP-1) mRNA complete cds	other
23759	>10	T90313	ESTs	other
23832	>10	T92018	ESTs	other
32740	>10	T92950	ESTs	other
42290	>10	T95105	ESTs	?
3598	>10	U01157	Glucagon-like peptide-1 receptor	SS, TM
3659	>10	U04313	Protease inhibitor 5 (maspin)	other
3799	>10	U10690	Human MAGE-5a antigen (MAGE5a) gene complete cds	?
3870	>10	U14518	Centromere protein A (17kD)	other
3913	>10	U16261	Human MDA-7 (mda-7) mRNA complete cds	SS,
4029	>10	U21090	Human DNA polymerase delta small subunit mRNA complete cds	other
4157	>10	U28811	Human cysteine-rich fibroblast growth factor receptor (CFR-1) mRNA complete cds	other
4178	>10	U30246	Human bumetanide-sensitive Na-K-Cl cotransporter (NKCC1) mRNA complete cds	TM
15006	>10	U30246	Human bumetanide-sensitive Na-K-Cl cotransporter (NKCC1) mRNA complete cds	TM

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4193	>10	U31116	Human beta-sarcoglycan A3b mRNA complete cds	TM
4306	>10	U36798	Homo sapiens platelet cG1-PDE mRNA complete cds	TM
4362	>10	U39817	Bloom syndrome	other
4386	>10	U40622	DNA repair protein XRCC4	other
4388	>10	U40714	Human tyrosyl-tRNA synthetase mRNA complete cds	other
4455	>10	U43944	MALATE OXIDOREDUCTASE	other
4477	>10	U45880	Human IAP-like protein (LIP) mRNA complete cds	other
4680	>10	U55766	Human Rev interacting protein Rip-1 mRNA complete cds	TM
4702	>10	U57341	EST - U57341	other
4713	>10	U57721	Human L-tryptophan hydrolase mRNA complete cds	other
4787	>10	U61145	Human enhancer of zeste homolog 2 (EZH2) mRNA complete cds	other
4862	>10	U65437	Human homeodomain-containing protein (HANF) mRNA complete cds	?
4945	>10	U69108	Homo sapiens mRNA for TRAF5 complete cds	other
4975	>10	U71088	Human MEK5 mRNA complete cds	other
4994	>10	U72514	Human C2f mRNA complete cds	other
5002	>10	U72761	Human karyopherin beta 3 mRNA complete cds	other
5021	>10	U73524	Human putative ATP/GTP-binding protein (HEAB) mRNA complete cds	TM
5149	>10	U79716	Human reelin (RELN) mRNA complete cds	SS,
5214	>10	U83303	H.sapiens mRNA for granulocyte chemotactic protein	?
5243	>10	U85946	Human brain secretory protein hSec10p (HSEC10) mRNA complete cds	other
32789	>10	W02779	ESTs Moderately similar to kinesin-73 [D.melanogaster]	other
42354	>10	W19346	ESTs	other
42390	>10	W40150	Homo sapiens chromosome-associated polypeptide (HCAP) mRNA complete cds	other
33006	>10	W46286	ESTs Weakly similar to ZK1058.5 [C.elegans]	TM
33020	>10	W46891	ESTs Weakly similar to polypeptide N-acetylglucosaminyltransferase [H.sapiens]	other
33109	>10	W59961	Human mRNA for KIAA0389 gene complete cds	other
24197	>10	W67277	ESTs	other
24215	>10	W69425	ESTs	other
33301	>10	W73883	ESTs	other
33343	>10	W79834	ESTs Weakly similar to rhotekin [M.musculus]	other
33377	>10	W81219	ESTs Weakly similar to F4GB6.7 [C.elegans]	other
42602	>10	W86423	ESTs	TM
33556	>10	W90705	Murine leukemia viral (bmi-1) oncogene homolog	other
33616	>10	W93726	Protease inhibitor 5 (maspin)	other
33666	>10	W95876	ESTs	TM
5510	>10	X05360	Cell division cycle 2 G1 to S and G2 to M	?
5558	>10	X07876	Wingless-type MMTV integration site 2 human homolog	SS,
5603	>10	X14253	Teratocarcinoma-derived growth factor 1	TM
5619	>10	X14850	HISTONE H2A.X	SS,
5623	>10	X14975	T-CELL SURFACE GLYCOPROTEIN CD1E PRECURSOR	?
5692	>10	X17644	G1 to S phase transition 1	other
5789	>10	X54925	Matrix metalloproteinase 1 (interstitial collagenase)	other
5799	>10	X55330	Asparitylglucosaminidase	SS,
5802	>10	X55544	CYCLIC-AMP-DEPENDENT TRANSCRIPTION FACTOR ATF-1	?
5857	>10	X58377	Human mRNA for adipogenesis inhibitory factor	other
5960	>10	X63575	ATPase Ca++ transporting plasma membrane 2 (NOTE: redefinition of symbol)	TM
5963	>10	X63629	Cadherin 3 (P-cadherin)	SS, TM
5986	>10	X64810	Proprotein convertase subtilisin/kexin type 1	?
6041	>10	X67155	MITOTIC KINESIN-LIKE PROTEIN-1	other
6095	>10	X69962	Fragile X mental retardation 1	other

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6106	>10	X70683	SRY (sex determining region Y)-box 4	TM
6155	>10	X74331	DNA primase polypeptide 2A (58kD)	other
6167	>10	X74967	Ribonuclease L (2'5'-oligoadenylate synthetase-dependent) inhibitor	other
6188	>10	X76029	NEUROMEDIN U-25 PRECURSOR	TM
6315	>10	X81889	H.sapiens mRNA for p0071 protein	other
6382	>10	X85133	H.sapiens RBQ-1 mRNA	other
6384	>10	X85137	Human kinesin-like spindle protein HKSP (HKSP) mRNA complete cds	other
6438	>10	X89398	URACIL-DNA GLYCOSYLASE 1 PRECURSOR	?
6449	>10	X89986	H.sapiens mRNA for NBK apoptotic inducer protein	TM
6478	>10	X91648	H.sapiens mRNA for pur alpha extended 3'untranslated region	SS, TM
6479	>10	X91653	EST - X91653	?
6494	>10	X92689	H.sapiens mRNA for UDP-GalNAc:polypeptide N-acetylglucosaminyl transferase	TM
6713	>10	Y08564	EST - Y08564	?
6790	>10	Y12394	Homo sapiens importin-alpha homolog (SRP gamma) mRNA complete cds	other
24915	>10	YEL003w/	EST - YEL003w/	?
42773	>10	YEL019c/MMS21	EST - YEL019c/MMS21	?
24545	>10	Z38462	ESTs	other
33713	>10	Z39427	ESTs	other
33791	>10	Z40883	ESTs	other
42766	>10	Z99394	ESTs Moderately similar to !!! ALU SUBFAMILY SP WARNING ENTRY !!! [H.sapiens]	other
21558	>10	R33112	Human AF-6 mRNA complete cds	other
26718	>10	AA282576	ESTs	?
40113	9.9955090946	H78003	ESTs	?
10801	9.9879448276	AA069285	ESTs Weakly similar to PROBABLE UBIQUITIN CARBOXYL-TERMINAL HYDROLASE R10E11.3 [C.elegans]	other
37491	9.9513600842	AA455239	ESTs Highly similar to CHROMOSOME CONDENSATION PROTEIN DPY-27 [Caenorhabditis elegans]	other
23900	9.9272347693	T95789	ESTs	other
254	9.9198395324	D14657	Human mRNA for KIAA0101 gene complete cds	other
6885	9.8970927914	Z29331	Ubiquitin-conjugating enzyme E2H (homologous to yeast UBCB)	other
29693	9.8850766398	H97819	ESTs	SS,
26482	9.8765189024	AA262491	ESTs	other
23123	9.8699502035	T25306	EST	?
26525	9.8160399123	AA278392	ESTs	other
13110	9.7643356605	AA435840	Homo sapiens mRNA for high mobility group protein HMG2a	other
34863	9.7087597628	AA299784	EST	other
39432	9.7034550083	O51691	Phosphoribosylglycinamide formyltransferase phosphoribosylglycinamide synthetase phosphoribosylaminimidazole synthetase	?
31312	9.6513325388	N66845	ESTs Weakly similar to !!! ALU CLASS B WARNING ENTRY !!! [H.sapiens]	?
21112	9.6358446349	R01179	ESTs	?
31572	9.6254820695	N71294	ESTs	other
17903	9.6221228759	AA160259	EST	?
20747	9.6094813734	N66842	ESTs	other
4676	9.589223908	U55206	Homo sapiens human gamma-glutamyl hydrolase (hGH) mRNA complete cds	TM
34363	9.5627081023	AA251587	Homo sapiens mRNA for KIAA0530 protein partial cds	other
38094	9.540768988	AA620636	ESTs	other
3888	9.5372000133	U15128	Human beta-12-N-acetylglucosaminyltransferase II (MGAT2) gene complete cds	?
39386	9.508250529	D12184	ESTs	TM
7674	9.4458059039	AA203742	ESTs	other
4192	9.4329744134	U31099	Human DP prostanoid receptor (PTGDR) mRNA partial cds	TM
4507	9.422674945	U47050	Human putative calcium influx channel (htrp3) mRNA complete cds	TM

FIGURE 8 (cont.)

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35606	9.412026255	AA402227	ESTs Moderately similar to N-tropomodulin [R.norvegicus]	other
4970	9.3649551013	U70862	Human nuclear factor I-B2 (NFIB2) mRNA complete cds	?
19829	9.3432151573	H58813	EST	?
14837	9.2878584141	T40145	ESTs	TM
17336	9.2622148675	AA099585	ESTs	other
40541	9.2532636505	N30160	ESTs	other
29496	9.2487643833	H85434	EST	?
29943	9.1797074262	N24786	ESTs Moderately similar to !!! ALU SUBFAMILY J WARNING ENTRY !!! [H.sapiens]	TM
17997	9.1629881314	AA169633	EST	other
21320	9.1243463318	R11673	ESTs	other
13883	9.1178796537	AA476917	ESTs Weakly similar to No definition line found [C.elegans]	other
30539	9.0886887776	N49072	ESTs	other
32778	9.0877919549	W02063	EST	?
26380	9.0809559378	AA257012	EST	?
15888	9.0595893607	X95632	Human Abi interactor 2 (Abi-2) mRNA complete cds	other
40812	9.0012874244	N63419	ESTs	other
803	8.9640387908	D90070	ATL-derived PMA-responsive (APR) peptide	other
22674	8.9515777733	R87160	ESTs	TM
40807	8.9510132281	N62995	TRANSCRIPTION INITIATION FACTOR IIF BETA SUBUNIT	other
15244	8.9195644974	W00904	ESTs	TM
32296	8.8658776567	R67075	Zinc finger protein X-linked	other
18269	8.8575656789	AA209467	ESTs	other
19662	8.8507626284	H47391	ESTs	other
41607	8.833925517	R67868	CLEAVAGE SIGNAL-1 PROTEIN	other
2548	8.8299864699	M25897	Platelet factor 4	TM
7736	8.8279341243	AA232121	Human tyrosyl-tRNA synthetase mRNA complete cds	other
34490	8.7844537272	AA262354	ESTs	other
38658	8.7669313482	AA599477	ESTs	other
7528	8.765157554	AA148543	ESTs	other
39939	8.7555031142	H53454	EST - RC_H53454	other
25111	8.7232692309	AA820787	ESTs	other
21655	8.716167279	R38239	EST	?
39663	8.665982852	H04756	ESTs Highly similar to NADH:UBIQUINONE OXIDOREDUCTASE B17 SUBUNIT [Bos taurus]	other
1042	8.652112324	HG2510-HT2606	EST - HG2510-HT2606	?
32330	8.6361115426	R77776	ESTs	other
25382	8.6239456487	AA059007	ESTs	other
27074	8.5900813076	AA401475	ESTs Weakly similar to C36B1.3 [C.elegans]	SS,
3955	8.5298909183	U18259	MHC class II transactivator	other
4959	8.52646827	U70322	Human transportin (TRN) mRNA complete cds	other
2315	8.5259185808	M14123	EST - M14123_xpt1	?
37253	8.4896914632	AA449357	ESTs	other
38624	8.471316877	F10836	ESTs	?
23213	8.4569920887	T40891	ESTs	?
2798	8.455596435	M54995	Connective tissue activation peptide III	TM
41154	8.4413390141	R07499	ESTs	?
32479	8.4093689549	T16282	WEE1-LIKE PROTEIN KINASE	other
41251	8.3587565415	R28279	Human clone 23548 mRNA sequence	other
19081	8.3583603183	H06701	ESTs Weakly similar to RHOMBOTIN-1 [H.sapiens]	other
21098	8.3105927559	R00545	ESTs	other
14723	8.3061679053	D59894	ESTs	other
37154	8.2994822341	AA447666	Human CENP-F kinetochore protein mRNA complete cds	other

FIGURE 8 (cont.)

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8068	8.2835586361	AA313387	ESTs Highly similar to HYPOTHETICAL B47 KD PROTEIN ZK1098.1 IN CHROMOSOME III [Caenorhabditis elegans]	other
7485	8.281679348	AA129547	ESTs	other
16501	8.2517969834	AA028869	ESTs	other
34527	8.2419163754	AA279091	ESTs	other
6700	8.1948675662	Y07867	H.sapiens mRNA for Pirin isolate 1	other
2852	8.1928816537	M58460	Human 75-kD autoantigen (PM-Sc1) mRNA complete cds	other
11188	8.1862492468	AA172372	ESTs	TM
42293	8.183311064	T95333	ESTs Weakly similar to coded for by C. elegans cDNA yk110g8.3 [C.elegans]	TM
5443	8.1763317544	X02530	Interferon (gamma)-induced cell line protein 10 from	SS.
40937	8.1534810594	N70607	ESTs	TM
23371	8.1499496068	T59505	EST - RC_T59505	?
26272	8.133974519	AA252981	ESTs Weakly similar to K07C11.10 gene product [C.elegans]	other
17306	8.1332403762	AA086201	ESTs	other
18497	8.1192326373	AA233795	ESTs	other
235	8.0944363901	D13644	Human mRNA for KIAA0019 gene complete cds	other
24525	8.0860187097	Z38347	ESTs	TM
7826	8.0750029554	AA248884	EST - AA248884	TM
32142	8.0739258775	R38715	Homo sapiens clone 24540 mRNA sequence	other
39067	8.0557768803	AA620405	ESTs	other
6235	8.0448857236	X78416	Casein alpha S1	TM
29517	8.0017588725	H88261	ESTs	other
28570	7.9852455973	C21104	Homo sapiens STAT-induced STAT inhibitor-2 mRNA complete cds	other
39344	7.9162087762	C21034	ESTs Moderately similar to initiation factor eIF-2B gamma subunit [R.norvegicus]	other
18951	7.9002189759	H00580	ESTs	other
18953	7.8709160227	H00615	ESTs	other
18376	7.8564099916	AA226925	ESTs	other
19830	7.847878447	H58911	ESTs	other
36023	7.840835828	AA416881	ESTs	other
13347	7.8344414518	AA449238	ESTs	other
36614	7.8284591351	AA431466	ESTs	other
2192	7.8254072032	L48211	Homo Sapiens angiotensin II receptor gene complete cds	?
33016	7.8006574068	W46577	H.sapiens mRNA for ESM-1 protein	other
17215	7.7941954038	AA083044	ESTs	other
34894	7.7659738105	AA311881	EST	?
40614	7.695001222	N39257	ESTs	other
36295	7.6834749899	AA424534	ESTs	other
19564	7.6744302788	H38833	ESTs	TM
16914	7.6686405336	AA058665	ESTs	SS.
35967	7.6378079107	AA412694	Human splicing factor SRp55-2 (SRp55) mRNA complete cds	other
21672	7.6364823402	R38635	ESTs	other
19918	7.6303275831	H69787	ESTs	?
10511	7.6297744492	AA024482	ESTs Highly similar to KERATIN TYPE I CYTOSKELETAL 14 [Homo sapiens]	other
17721	7.6057911016	AA136590	ESTs	?
42302	7.6031859697	T96130	EST	SS.
26134	7.6000619383	AA243763	ESTs	other
18766	7.5621799008	F09497	ESTs	other
34492	7.501590494	AA262439	ATL-derived PMA-responsive (APR) peptide	other
270	7.4512152125	D14822	EST - D14822	other
35975	7.4177746986	AA412738	ESTs	other
29842	7.4095809671	N21688	ESTs	?

FIGURE 8 (cont.)

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35389	7.3913043319	AA389555	ESTs	other
19979	7.3868157166	H88477	ESTs	other
5793	7.3865864025	X54942	CDC28 protein kinase 2	other
19978	7.380969715	H87770	EST - RC_H87770	other
1280	7.3691089318	HG4126-HT4396	EST - HG4126-HT4396	?
31571	7.3676263454	N71250	ESTs	other
23765	7.3541191734	T90443	ESTs Weakly similar to KIAA0376 [H.sapiens]	?
35123	7.3397933455	AA380927	EST	?
38252	7.3341119467	AA489247	ESTs	other
38216	7.3282021037	AA488861	ESTs	other
29418	7.2489407005	H77915	EST - RC_H77915	?
4834	7.1980951054	U63541	Human mRNA expressed in HC/HCC livers and MolT-4 proliferating cells partial sequence	other
42504	7.1913036522	V69803	ESTs	other
6111	7.158000198	X71125	H.sapiens mRNA for glutamine cyclotransferase	TM
41773	7.154479618	T03024	ESTs Weakly similar to ribosomal protein L7 [H.sapiens]	other
9951	7.1363626365	N71513	ESTs	other
28109	7.0941968224	AA485212	ESTs	other
988	7.0783044659	HG2160-HT2230	EST - HG2160-HT2230	?
29848	7.0610688511	N22107	ESTs	other
30628	7.0607950168	N50744	ESTs	other
22567	7.0225726353	R77771	ESTs	TM
9347	7.006323071	H03686	ESTs	TM
11696	7.0026773299	AA252894	ESTs	other
40584	7.0010096333	N34870	EST	?
193	6.9767029188	D10923	PROBABLE G PROTEIN-COUPLED RECEPTOR HM74	TM
18305	6.9740536051	AA214048	Collagen type IV alpha 4	other
6078	6.9699682397	X69141	FARNESYL-DIPHOSPHATE FARNESYLTRANSFERASE	other
26741	6.902658703	AA283198	ESTs	other
35069	6.8992865685	AA358397	EST	?
23504	6.8977135983	T71042	ESTs	other
299	6.8824513029	D16815	Homo sapiens orphan nuclear hormone receptor BD73 mRNA 3' end	other
40583	6.8689903023	N34855	ESTs	other
31428	6.8623762224	N68594	ESTs	other
6169	6.8606999727	X75091	SET PROTEIN	other
39524	6.8567355171	F01905	MALATE OXIDOREDUCTASE	other
34578	6.8430689439	AA280837	ESTs	other
38678	6.837527995	AA599920	Small inducible cytokine A5 (RANTES)	other
23936	6.8251471804	T96930	ESTs	other
9326	6.8181321394	D89377	Msh (Drosophila) homeo box homolog 2	other
19188	6.8067351968	H11255	ESTs Highly similar to ACTIN-LIKE PROTEIN [Bos taurus]	TM
18185	6.7882148811	AA194983	Homo sapiens mRNA for osteoclastogenesis inhibitory factor (OCIF) complete cds	other
27028	6.757529124	AA399630	ESTs Weakly similar to KIAA0371 [H.sapiens]	other
41289	6.7519531681	R37265	EST	other
34511	6.7364448788	AA278298	EST - RC_AA278298	other
1566	6.7056207716	J05614	EST - J05614	?
25675	6.6692299748	AA129757	ESTs Highly similar to 60S RIBOSOMAL PROTEIN L22 [Rattus norvegicus]	other
5814	6.6584342828	X56088	CYTOCHROME P450 VII	SS,
13861	6.6236291607	AA470145	ESTs	other
29794	6.6026313352	N20598	ESTs	other
39333	6.5902382643	C20910	Cyclin B1	other
3770	6.5835303599	U09609	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 2 (p49/p100)	other

FIGURE 8 (cont.)

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31831	6.5829933764	N89894	ESTs	?
33063	6.5808125026	V53000	Homo sapiens clone 24431 mRNA sequence	other
20326	6.5640084836	N35583	ESTs Weakly similar to PROBABLE E5 PROTEIN (Human papillomavirus type 58)	?
34384	6.5535703492	AA252537	ESTs	other
25589	6.5490481991	AA114091	Human (clone 8B1) Br-cadherin mRNA complete cds	other
39749	6.5369363254	H14988	ESTs	other
42596	6.5200567072	W85900	ESTs	?
39606	6.5119482185	F10243	ESTs Weakly similar to !!! ALU CLASS B WARNING ENTRY !!! (H.sapiens)	?
14617	6.5105504748	C14983	ESTs	other
27831	6.45670814	AA456044	ESTs	?
34896	6.4466517783	AA312551	EST	?
27360	6.4434305006	AA425356	ESTs	other
20126	6.4326810424	N22015	ESTs	TM
6663	6.4324809977	Y00291	RETINOIC ACID RECEPTOR BETA-2	TM
30692	6.4196836207	N51563	ESTs	other
36472	6.4189542265	AA428633	EST	?
9578	6.3961788753	H87652	Homo sapiens bicaudal-D (BICD) mRNA complete cds	other
39670	6.3818496159	H05626	ESTs	other
22697	6.3652792447	R89218	ESTs	other
37308	6.3647804993	AA451694	EST	TM
16101	6.3517262802	AA002147	EST	?
20629	6.3486854401	N59798	ESTs	other
36100	6.3364146287	AA417740	ESTs	?
15488	6.3252650241	V28097	Homo sapiens clone 23711 unknown mRNA partial cds	other
36667	6.3131273544	AA432136	ESTs	other
30766	6.3115037824	N52627	EST - RC_N52627	?
32882	6.2745311453	W37683	ESTs	TM
18072	6.2675797205	AA180448	EST	?
18231	6.2652604863	AA189747	Human mRNA for KIAA0096 gene partial cds	other
38282	6.2514165678	AA489814	EST	?
28125	6.250317021	AA486073	ESTs	other
37464	6.2484456382	AA454747	ESTs	?
36618	6.1946328223	AA431478	ESTs	other
5082	6.1931116815	U78524	Human Gu binding protein mRNA partial cds	other
1441	6.1777287039	J02963	Integrin alpha 2b (platelet glycoprotein IIb of IIb/IIIa complex antigen CD41B)	other
42105	6.14878944	T67710	ESTs	?
6061	6.1394863141	X68314	Glutathione peroxidase 2 gastrointestinal	SS
32570	6.1156028796	T30222	ESTs Weakly similar to tetracycline transporter-like protein [M.musculus]	TM
32504	6.1018612076	T17063	EST	?
23335	6.0977927504	T56804	EST	?
10667	6.0970991075	AA088458	ESTs Weakly similar to !!! ALU SUBFAMILY J WARNING ENTRY !!! (H.sapiens)	other
30883	6.0911993489	N56923	EST	?
14528	6.0859008453	AA620295	ESTs	TM
29454	6.0685955036	H81308	EST	?
6798	6.0539173278	Y13153	Homo sapiens mRNA for kynurenine 3-monooxygenase	TM
21248	6.0525426545	R08871	ESTs	?
21940	6.0499964138	R44538	ESTs	?
29066	6.0455247653	F10927	Homo sapiens clone 23636 mRNA sequence	other
18774	6.0446826953	F09609	ESTs	?
36722	6.0172343991	AA435512	ESTs	SS
18062	6.0034342969	AA179845	ESTs Moderately similar to rabkinesin-6 [M.musculus]	other

FIGURE 8 (cont.)

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22889	5.9992817406	T16305	ESTs	other
41745	5.9905623898	R95895	ESTs	?
8787	5.9894877658	AA504307	X-LINKED HELICASE II	other
20550	5.984861795	N55013	ESTs	other
26470	5.9417764101	AA262179	ESTs	other
16574	5.9356497569	AA031926	EST	other
693	5.9169537385	D80007	Human mRNA for KIAA0185 gene partial cds	other
4093	5.914830973	U25182	Human antioxidant enzyme AOE37-2 mRNA complete cds	TM
1192	5.9086264407	HG3546-HT3744	EST - HG3546-HT3744	?
22656	5.8954735623	T10248	ESTs	other
36723	5.891606409	AA435524	EST	?
2114	5.8844986595	L40384	EST - L40384	other
26872	5.868238789	AA291137	ESTs	other
6602	5.8663883018	X98266	EST - X98266_cds2	other
42701	5.8594493433	Z38612	ESTs	other
28573	5.84591116	C21118	ESTs	other
18290	5.8189427595	AA211901	ESTs	other
732	5.8043917941	D83781	Human mRNA for KIAA0197 gene partial cds	other
5330	5.8014145811	U91327	EST - U91327	?
33503	5.7990715189	W68720	EST	?
2553	5.7787505864	M26167	Human platelet factor 4 variation 1 (PF4var1) gene complete cds	?
34705	5.7658806254	AA286907	ESTs Weakly similar to putative p150 [H.sapiens]	other
42665	5.7594091043	W93659	ESTs	other
38180	5.7539310783	AA487495	EST - RC_AA487495	other
4244	5.7476738809	U33286	Human chromosome segregation gene homolog CAS mRNA complete cds	other
32822	5.7418957453	W16834	ESTs	TM
3977	5.7245885557	U18991	Retinal pigment epithelium-specific protein (65kD)	?
24673	5.7202366155	Z39301	ESTs	TM
6928	5.7120261128	Z46629	SRY (sex-determining region Y)-box 9 (campomelic dysplasia autosomal sex-reversal)	other
38726	5.7030796258	AA608733	ESTs	?
39290	5.6892372058	C14573	Human mRNA for KIAA0029 gene partial cds	other
11405	5.6818873796	AA232231	ESTs	other
22538	5.6792006591	R73567	Homo sapiens meltrin-L precursor (ADAM12) mRNA complete cds	TM
40747	5.6605393208	N56872	Homo sapiens clone 22 mRNA alternative splice variant alpha-1 complete cds	TM
31596	5.6554024604	N72094	ESTs	other
6329	5.6415652518	X82279	EST - X82279	?
31578	5.6273323661	N71361	ESTs	other
33207	5.6271818482	W70051	H.sapiens mRNA for M-phase phosphoprotein mpp9	other
2545	5.6105860146	M25753	Cyclin B1	other
22580	5.5988402647	R79156	ESTs	other
33592	5.5935314518	W93127	ESTs	other
28843	5.5734698755	D60252	ESTs	other
6160	5.5689050619	X74794	CDC21 HOMOLOG	other
37987	5.561345667	AA479666	ESTs	other
42515	5.5217868611	W72116	Homo sapiens clone 23622 mRNA sequence	other
4732	5.5130668527	U58522	Human huntingtin interacting protein (HIP2) mRNA complete cds	other
3299	5.5099805078	M95623	Hydroxymethylbilane synthase	?
28320	5.473406981	AA599574	ESTs	?
746	5.471200899	D84454	Human mRNA for UDP-galactose translocator complete cds	TM
39373	5.4635804954	C21517	ESTs	other
3117	5.4398413537	M81182	Peroxisomal membrane protein 1 (70kD Zellweger syndrome)	other

FIGURE 8 (cont.)

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21257	5.4343612441	R09196	ESTs Moderately similar to M-phase phosphoprotein 11 [H.sapiens]	other
31487	5.4318648859	N69507	ESTs	other
28954	5.4137130511	F03153	ESTs	other
38928	5.389782721	AA609595	ESTs	other
29903	5.3722320622	N23366	EST	?
30925	5.3437432315	N58295	ESTs Weakly similar to LINE-1 REVERSE TRANSCRIPTASE HOMOLOG [H.sapiens]	?
19091	5.3344615669	H07864	ESTs	TM
28209	5.3138951918	AA491250	ESTs	other
9470	5.3118897984	H46617	EST - H46617	other
9435	5.3070056656	H30201	EST - H30201	?
28552	5.2954432572	C20914	ESTs	other
27411	5.2940164267	AA428137	ESTs	other
30615	5.2924125264	N50556	ESTs	other
28313	5.2857977167	AA599309	ESTs	TM
39321	5.2649035384	C20632	ESTs	?
29934	5.2531047395	N24194	ESTs	other
1094	5.2496703122	HG2846-HT2983	EST - HG2846-HT2983	?
39578	5.2481126384	F08925	ESTs	TM
11232	5.2466798424	AA186804	ESTs Weakly similar to unknown [S.cerevisiae]	other
2466	5.2426349328	M21539	Human small proline rich protein (sprl) mRNA clone 1292	other
26843	5.2387758661	AA287450	ESTs	?
40331	5.2353385567	H97562	ESTs Weakly similar to SPERMATID-SPECIFIC PROTEIN T2 [Sepia officinalis]	other
8035	5.205798365	AA305116	EST - AA305116	other
29793	5.1955425722	N20583	ESTs Weakly similar to weak similarity to procollagen alpha chain 1(V) chain [C.elegans]	other
34109	5.1481590107	AA210722	EST	?
26408	5.1432577257	AA258177	ESTs Weakly similar to ROSA26AS [M.musculus]	other
19263	5.1427029807	H15054	ESTs	TM
24596	5.1416089352	Z38810	ESTs	other
28589	5.1385059753	C21245	H.sapiens mRNA for apoptosis specific protein	other
5684	5.1121931412	X17098	Pregnancy-specific beta-1 glycoprotein 6	other
30710	5.1079347344	N51761	EST	?
35765	5.0973514948	AA406167	EST	?
26360	5.0863127861	AA256460	ESTs	?
2351	5.0849612092	M15796	Proliferating cell nuclear antigen	?
30262	5.0836877534	N35065	Homo sapiens clone 24739 mRNA sequence	other
41782	5.0737512465	T03886	ESTs	?
36710	5.0703839864	AA434411	ESTs	other
39090	5.0546885407	AA620628	ESTs	TM
42185	5.0539926381	T79951	ESTs	?
18745	5.0480321557	F09134	ESTs	other
35746	5.0396841996	AA406063	ESTs	other
35356	5.0354809581	AA399053	EST	?
36769	5.0312706878	AA435750	EST	?
36900	5.0279911548	AA436866	H.sapiens mRNA for M-phase phosphoprotein mpp3	other
27595	5.0244757301	AA443328	ESTs	TM
16290	5.0056611904	AA016145	ESTs	?
27117	5.0016146599	AA405098	ESTs Weakly similar to MOESIN/EZRIN/RADUXIN HOMOLOG [D.melanogaster]	other
4304	4.9951954397	U36764	Eukaryotic translation initiation factor 3 (eIF-3) p36 subunit	other
33458	4.9907402071	W86835	Homo sapiens mRNA for KIAA0636 protein complete cds	other
26693	4.9800090679	AA282120	EST	?
12669	4.9758138651	AA417030	Homo sapiens protein regulating cytokinesis 1 (PRC1) mRNA complete cds	other

FIGURE 8 (cont.)

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29701	4 9708526387	H97970	EST	?
20480	4.8557253636	N52168	ESTs	TM
8720	4 9439110602	AA481218	EST - AA481218	other
34828	4 9431269475	AA292436	Homo sapiens semaphorin F homolog mRNA complete cds	SS, TM
14985	4.941621032	U15128	Human beta-12-N-acetylglucosaminyltransferase II (MGAT2) gene complete cds	?
16115	4.9377553522	AA004420	ESTs	?
42506	4.9348587118	W70074	EST	other
34761	4.9316837445	AA287833	ESTs	other
11870	4.9281056201	AA262587	ESTs	TM
23211	4.9258391854	T40889	ESTs	other
40611	4.9160502275	N39138	Homo sapiens mRNA for KIAA0584 protein partial cds	other
42611	4.9128605354	W87006	Homo sapiens putative RNA binding protein KOC (koc) mRNA complete cds	other
39652	4.9045174605	H03099	ESTs	other
17581	4.889674751	AA129395	EST	?
37239	4.8704375389	AA449121	ESTs	?
18712	4.8703618781	F04677	ESTs	other
30709	4.8611171953	N51752	ESTs Weakly similar to synapse-associated protein sap47-1 [D.melanogaster]	other
34179	4.8503613948	AA227903	ESTs Highly similar to GTP-BINDING PROTEIN LEPA [Pseudomonas fluorescens]	other
21433	4.825670988	R22183	EST	?
39731	4.8186142741	H11760	ESTs	other
31295	4.8116614607	N66653	ESTs	other
24647	4.804163055	Z39108	EST	?
31292	4.8008871817	N66615	ESTs	other
1285	4.7997542393	HG4157-HT4427	EST - HG4157-HT4427	?
1106	4.7932425858	HG2981-HT3127	EST - HG2981-HT3127	?
18212	4.7912262565	AA196506	ESTs	other
34367	4.782207045	AA251758	Homo sapiens spleen mitotic checkpoint BUB3 (BUB3) mRNA complete cds	other
34802	4.7797760205	AA291468	ESTs	TM
34762	4.7775301546	AA287834	ESTs	other
11595	4.7696612848	AA242819	ESTs	other
8295	4.7638839111	AA405082	ESTs	?
17622	4.758635576	AA131584	ESTs Weakly similar to SOF1 PROTEIN [Saccharomyces cerevisiae]	other
35781	4.7572463523	AA406335	ESTs	other
34754	4.7483874972	AA287642	Human mRNA for KIAA0078 gene complete cds	other
23237	4.7444854356	T47291	EST	?
37667	4.7280445357	AA460318	ESTs Highly similar to 60S RIBOSOMAL PROTEIN L26 [Rattus norvegicus]	other
11568	4.7257189975	AA236786	ESTs	other
38622	4.7190695733	AA598967	ESTs	?
5137	4.7057359474	U79296	Dihydrolipoamide S-acyltransferase (E2 component of pyruvate dehydrogenase complex)	other
25038	4.7002244728	AA010065	CDC2B protein kinase 2	other
19288	4.7000147312	H16567	ESTs	other
32503	4.6979488292	T17045	Collagen type I alpha-2	other
3278	4.6953739298	M94055	SODIUM CHANNEL PROTEIN BRAIN II ALPHA SUBUNIT	TM
9696	4.6942061018	L38961	Integral transmembrane protein 1	TM
35400	4.6901390898	AA399591	Homo sapiens putative DNA methyltransferase (DNMT2) mRNA complete cds	other
35246	4.6862691303	AA398367	EST Weakly similar to HSP60 protein [M.musculus]	?
36387	4.6822499271	AA426270	ESTs	other
21509	4.6730072542	R27314	ESTs	other
31381	4.6729672124	N67889	ESTs	other
26723	4.6727894925	AA282781	ESTs Highly similar to PRE-MRNA SPLICING FACTOR RNA HELICASE PRP28 [Saccharomyces cerevisiae]	other

FIGURE 8 (cont.)

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36326	4.6703621086	AA425151	Human GAP SH3 binding protein mRNA complete cds	other
17409	4.6688418667	AA113136	EST - RC_AA113136	other
4908	4.6552339935	U67156	Human mitogen-activated kinase kinase kinase 5 (MAPKKK5) mRNA complete cds	other
30594	4.6496238328	N49967	ESTs	other
38286	4.64639735	AA489847	ESTs Weakly similar to LINE-1 REVERSE TRANSCRIPTASE HOMOLOG [Nycticebus coucang]	?
13073	4.6426509459	AA433950	ESTs	other
40435	4.6240181066	N21614	Homo sapiens basic-leucine zipper transcription factor MafG (MAFG) mRNA complete cds	other
14474	4.6228694379	AA609427	ESTs Moderately similar to III ALU SUBFAMILY SC WARNING ENTRY III [H.sapiens]	other
38213	4.615309907	AA488847	ESTs Weakly similar to putative p150 [H.sapiens]	?
5312	4.606644198	U90716	Human cell surface protein HCAR mRNA complete cds	SS, TM
24225	4.6041550359	W70326	ESTs	?
35588	4.5868982366	AA401750	EST	?
29739	4.5863199051	H99626	EST	?
7203	4.5792992577	AA053096	EST - AA053096	other
2157	4.5772055869	L41939	Homo sapiens protein-tyrosine kinase EPHB2v (EPHB2) mRNA complete cds	SS, TM
32086	4.5661024279	R11510	ESTs	?
8085	4.5648114738	AA314779	ESTs Weakly similar to LITHOSTATHINE 1 BETA PRECURSOR [H.sapiens]	SS,
224	4.5622018989	D13633	Human mRNA for KIAA0008 gene complete cds	other
34006	4.5609980241	AA188761	DNA polymerase gamma	other
33656	4.5557384389	W95477	ESTs	other
34065	4.5537335124	AA195517	ESTs Weakly similar to III ALU SUBFAMILY J WARNING ENTRY III [H.sapiens]	TM
6028	4.5357922097	X66503	Adenylosuccinate synthase	other
4166	4.5032930671	U29463	Cytochrome B561	?
40262	4.5024727522	H93562	ESTs	TM
22687	4.5018672549	R88209	ESTs	TM
41069	4.4977510482	N93969	H.sapiens mRNA for hFat protein	SS,
8264	4.4793100575	AA401334	ESTs	other
27588	4.472017297	AA443187	ESTs	other
35882	4.4717597552	AA412047	ESTs	?
34479	4.465519191	AA262080	Human bumetanide-sensitive Na-K-Cl cotransporter (NKCC1) mRNA complete cds	TM
15921	4.4548516436	Y12065	Homo sapiens mRNA for nucleolar protein hNop56	?
11279	4.4380038671	AA195399	ESTs	other
39222	4.4367650786	AA621348	ESTs Highly similar to DOLICHYL-PHOSPHATE BETA-GLUCOSYLTRANSFERASE [Saccharomyces cerevisiae]	other
34428	4.4364736766	AA256526	ESTs	other
8771	4.432067373	AA491188	ESTs	other
22193	4.4189610024	R53891	Homo sapiens mRNA from chromosome 5q21-22 clone:A3-A	other
7898	4.4066170674	AA263032	ESTs	other
19902	4.3886145805	H66736	ESTs	other
9276	4.3868095209	D82374	ESTs	other
10716	4.3794529068	AA053319	ESTs	TM
13193	4.3751913512	AA442763	ESTs Highly similar to G2/MITOTIC-SPECIFIC CYCLIN B2 [Mesocricetus auratus]	other
5690	4.3723059417	X17620	NUCLEOSIDE DIPHOSPHATE KINASE A	other
35102	4.37147138	AA371509	EST - RC_AA371509	TM
17983	4.3612985467	AA169226	ESTs	other
24962	4.3497206925	AFFX-HUMTFRRM11507_5	AFFX-HUMTFRRM11507_5	?
31680	4.3416539669	N74438	ESTs	other
27168	4.330306894	AA410258	ESTs	other
28731	4.3231846659	D20981	EST	?
28348	4.3212284906	AA608752	ESTs	other

FIGURE 8 (cont.)

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16335	4.3019961487	AA018587	ESTs Weakly similar to !!!! ALU SUBFAMILY SP WARNING ENTRY !!!! [H.sapiens]	?
33036	4.2915644973	W48580	ESTs Weakly similar to transposon LRE2 reverse transcriptase homolog [H.sapiens]	other
30180	4.2897721925	N33144	ESTs	other
35591	4.2895541242	AA401758	ESTs Weakly similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]	SS,
25340	4.2721717135	AA054554	EST	?
28106	4.2659103748	AA485084	ESTs	other
38690	4.2649184307	AA600121	ESTs	other
20203	4.2626499431	N26855	ESTs Moderately similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]	other
10251	4.2608760694	R76185	ESTs Weakly similar to CD1H6.7 [C.elegans]	SS,
12684	4.2604192389	AA417558	ESTs	SS,
31636	4.2509469427	N73680	Natural resistance-associated macrophage protein 2	TM
20769	4.2479765348	N67277	ESTs	other
1572	4.2353281083	K01884	EST - K01884	?
10923	4.2292322072	AA116036	ESTs	other
34380	4.2283792392	AA252414	ESTs	other
10132	4.2222816115	R35733	EST - R35733	other
16629	4.2161752119	AA036811	ESTs	other
25146	4.1969883794	AA026356	ESTs	?
28730	4.1965943098	D20959	ESTs Moderately similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]	other
10200	4.1874912391	R64521	ESTs	other
38695	4.1545794663	AA600176	ESTs	other
31365	4.150549979	N67550	ESTs	other
42379	4.1496120668	W37899	ESTs	other
28050	4.1428703354	AA479139	Acid phosphatase 1 soluble	other
2620	4.1386565707	M29474	Human recombination activating protein (RAG-1) gene complete cds	?
8927	4.1340593744	AF008442	Homo sapiens RNA polymerase I subunit hRPA39 mRNA complete cds	other
13379	4.1269549188	AA449741	ESTs Weakly similar to AF-9 PROTEIN [H.sapiens]	other
5134	4.1218251808	U79293	Human clone 23948 mRNA sequence	other
2626	4.1213948	M29581	Zinc finger protein 8 (clone HF.18)	other
38005	4.1160483666	AA478969	ESTs	other
38575	4.1127196584	AA431085	EST	?
18296	4.1121837207	AA213620	ESTs Weakly similar to putative p150 [H.sapiens]	?
29531	4.1111459313	H88953	EST - RC_H88953	TM
143	4.1095880506	AFFX- HUMTFRR/M115 07	AFFX-HUMTFRR/M11507_5	?
10970	4.0967613396	AA129390	ESTs	other
25836	4.0952825397	AA152305	Interferon (gamma)-induced cell line protein 10 from	SS,
19735	4.0937927853	H53038	EST	?
40711	4.0909709431	N53564	ESTs	other
4149	4.0901471427	U28386	RAG (recombination activating gene) cohort 1	TM
5767	4.0862784557	X53793	MULTIFUNCTIONAL PROTEIN ADE2	other
5503	4.0861035825	X05232	Stromelysin	SS,
20310	4.0641711656	N34893	ESTs Highly similar to HYPOTHETICAL 47.8 KD PROTEIN B0280.9 IN CHROMOSOME III [Caenorhabditis elegans]	other
456	4.0599824566	D38145	Prostaglandin I2 (prostaglandin) synthase	SS,
7814	4.0559685576	AA248406	ESTs	other
40230	4.0447282719	H90161	ESTs	SS,
33651	4.039204804	W95409	ESTs	other
16777	4.0231657829	AA046968	EST	?
19110	4.0094905222	H08778	ESTs	other
34442	4.0077010365	AA258093	HKR-T1	other
5099	4.004992433	U79247	Human clone 23599 mRNA sequence	TM

FIGURE 8 (cont.)

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8209	3.9990473163	AA384220	ESTs	other
24408	3.9976586074	W90146	ESTs	other
26596	3.9974919787	AA279943	ESTs	other
16485	3.9811264008	AA026269	Spleen focus forming virus (SFFV) proviral integration oncogene sp1	other
32969	3.9804901745	W42451	ESTs	TM
27006	3.9799768093	AA398695	ESTs Weakly similar to E04F6.2 gene product [C.elegans]	other
29809	3.9526765967	N21043	EST	?
9596	3.9440163451	H91564	ESTs	TM
29024	3.9377933938	F09315	Homo sapiens mRNA for KIAA0583 protein partial cds	other
21694	3.9356365504	R39317	Homo sapiens protein-tyrosine kinase EPHB2v (EPHB2) mRNA complete cds	other
13207	3.929998104	AA443321	ESTs	other
37865	3.9143752629	AA476623	ESTs Highly similar to PUTATIVE UBIQUITIN CARBOXYL-TERMINAL HYDROLASE C13A11.04C [Schizosaccharomyces pombe]	other
36201	3.9128828172	AA421164	ESTs	?
8961	3.8981160269	AFFX-HUMTFRRM11507_3	AFFX-HUMTFRRM11507_3	?
17444	3.8927133917	AA115933	ESTs	other
25869	3.8919834527	AA157267	ESTs Highly similar to HYPOTHETICAL 37.7 KD PROTEIN ZK686.3 IN CHROMOSOME III [Caenorhabditis elegans]	TM
24862	3.89042252	Z41415	ESTs Highly similar to BONE MORPHOGENETIC PROTEIN 1 PRECURSOR [Mus musculus]	other
26685	3.889363206	AA281950	ESTs	?
42300	3.8850230366	T95850	ESTs	?
6495	3.8830844863	X92715	Zinc finger protein 74 (Cos52)	other
38604	3.8828045942	AA598803	ESTs	TM
36358	3.8826713718	AA425756	ESTs	other
30560	3.873276445	N49284	MYB PROTO-ONCOGENE PROTEIN	other
14413	3.8724468158	AA600150	ESTs	other
23823	3.8574824967	T91805	Homo sapiens mRNA for ST1C2 complete cds	other
38158	3.853096838	AA487021	EST	?
2572	3.8519747554	M27281	Vascular endothelial growth factor	other
40100	3.8464168967	H75933	Laminin receptor (2H5 epitope)	other
40258	3.8462992993	H93340	ESTs	TM
20944	3.8461621525	N74443	ESTs	other
20411	3.8459400965	N48963	Homo sapiens mRNA for KIAA0589 protein partial cds	other
10345	3.8457714481	AA001663	ESTs	other
31261	3.8451974374	N66248	EST	other
8513	3.8378410994	AA446990	ESTs	other
13877	3.8363409835	AA476604	ESTs	other
40748	3.8253562321	N56879	EST	?
14509	3.8152852193	AA609943	ESTs	other
10281	3.8065667331	R80333	ESTs	other
25284	3.8044158642	AA045074	ESTs Weakly similar to 52-kD SS-A/Ro autoantigen [H.sapiens]	other
6730	3.7900025129	Y09305	H.sapiens mRNA for protein kinase Dyrk4 partial	other
16033	3.7884592402	AFFX-HUMISGF3A/M97935_M8	AFFX-HUMISGF3A/M97935_M8	?
39242	3.7827164808	AA621523	ESTs	other
27354	3.7794760435	AA425221	ESTs	?
4552	3.777263605	U49188	Human placenta (Dif33) mRNA complete cds	SS, TM
18385	3.7756199108	AA227219	Homo sapiens CAGF9 mRNA partial cds	other
16754	3.7677416053	AA046067	EST - RC_AA046067	other
12752	3.7671137403	AA421250	ESTs	other
42463	3.7601033106	W60180	ESTs	other

FIGURE 8 (cont.)  
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10614	3.7581669016	AA037357	ESTs	?
867	3.7459337969	D87716	Human mRNA for KIAA0007 gene partial cds	other
7608	3.7336047135	AA180967	ESTs	other
31795	3.732738742	N80703	ESTs	other
35377	3.7273784603	AA399453	EST - RC_AA399453	?
22828	3.7243928524	R98192	ESTs	other
25240	3.7243198336	AA039713	ESTs	other
11008	3.7197361366	AA134289	ESTs Weakly similar to ASH1 [D.melanogaster]	?
4341	3.7162349944	U38545	Human ARF-activated phosphatidylcholine-specific phospholipase D1a (hPLD1) mRNA complete cds	other
28833	3.7147818393	D59787	EST - RC_D59787_f	?
3750	3.7121007154	U09279	Collagen type XIX alpha 1	SS,
17483	3.6943413512	AA122147	ESTs	TM
16854	3.6915208471	AA055552	ESTs Weakly similar to KIAA0319 [H.sapiens]	TM
3709	3.6891656771	U07550	Heat shock 10 kD protein 1 (chaperonin 10)	other
1608	3.6652978422	L00205	KERATIN TYPE II CYTOSKELETAL 6D	?
24577	3.6617721053	Z38727	Homo sapiens mRNA for KIAA0555 protein complete cds	TM
31032	3.6570916386	N62508	ESTs	other
4951	3.6536195433	U69546	Human RNA binding protein Etr-3 mRNA complete cds	other
37660	3.6523275307	AA480225	ESTs	other
20418	3.6495357091	N49209	ESTs	other
27895	3.6485167436	AA470155	Homo sapiens costamer protein (COPA) mRNA complete cds	?
7971	3.6434397185	AA287423	ESTs	other
27606	3.64303453	AA443793	ESTs	other
24677	3.6427250633	Z39338	ESTs Highly similar to POLIOVIRUS RECEPTOR HOMOLOG PRECURSOR [Mus musculus]	other
11070	3.6406198277	AA148521	ESTs Weakly similar to putative p150 [H.sapiens]	TM
9328	3.6356048599	D89618	Homo sapiens importin-alpha homolog (SRP1gamma) mRNA complete cds	other
36826	3.634689802	AA435996	ESTs	other
17678	3.6300045795	AA134275	Human HIV1 tata element modulatory factor mRNA sequence from chromosome 3	other
36209	3.6274694477	AA421266	ESTs Weakly similar to LIS-1 protein [H.sapiens]	other
34120	3.6258090412	AA211615	EST	?
38152	3.6246442011	AA486737	H.sapiens mRNA for Sm protein F	TM
38463	3.6184693268	AA504491	ESTs Weakly similar to contains similarity to C3HC4-class zinc finger [C.elegans]	TM
20064	3.6183699978	H98653	ESTs	TM
31256	3.5992620732	N66152	EST	?
9713	3.5985228843	L44338	Homo sapiens mRNA for KIAA0525 protein partial cds	other
28622	3.5768056147	D11837	ESTs	?
38057	3.5736105703	AA481549	EST - RC_AA481549	other
28763	3.5688723791	D45568	EST	?
16996	3.5680705709	AA069038	EST - RC_AA069038	TM
28628	3.5604144617	D11868	ESTs Moderately similar to PROHIBITIN [H.sapiens]	?
25804	3.5442954572	AA148885	ESTs	?
2492	3.5423964239	M22898	Tumor protein p53 (Li-Fraumeni syndrome)	?
14904	3.5411970737	T83389	ESTs Highly similar to GEPHYRIN [Rattus norvegicus]	other
25265	3.5347588502	AA043765	H.sapiens RY-1 mRNA for putative nucleic acid binding protein	other
13606	3.5327912417	AA456437	ESTs Weakly similar to CLEAVAGE STIMULATION FACTOR 64 KD SUBUNIT [H.sapiens]	other
42307	3.5318436465	T96595	EST - RC_T96595	TM
1544	3.526202414	J05068	TRANSCOBALAMIN I PRECURSOR	SS,
42339	3.5195061035	W02072	ESTs Weakly similar to No definition line found [C.elegans]	other
42311	3.5183719631	T97257	ESTs	other
2023	3.5040279423	L34600	INITIATION FACTOR IF-2 MITOCHONDRIAL PRECURSOR	other

FIGURE 8 (cont.)

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4540	3.4955308569	U48807	Human MAP kinase phosphatase (MKP-2) mRNA complete cds	other
33707	3.4888534277	Z39297	Neuronal pentraxin II	other
17220	3.4755763461	AA083070	EST - RC_AA083070_s	SS,
24332	3.4725273806	W85782	ESTs	other
35887	3.4668063718	AA412067	ESTs	other
20158	3.4538150055	N23636	ESTs Weakly similar to coded for by C. elegans cDNA yk52e10.5 [C.elegans]	other
8338	3.4465832071	AA417152	Homo sapiens protein regulating cytokinesis 1 (PRC1) mRNA complete cds	other
387	3.4421627234	D28589	EST - D28589	other
12319	3.4356269717	AA398109	ESTs	SS, TM
38276	3.4313139432	AA489711	ESTs	TM
15643	3.4312194246	W58247	ESTs Highly similar to KINESIN-LIKE PROTEIN KIF4 [Mus musculus]	other
11218	3.4232832843	AA180488	ESTs	TM
16539	3.417886379	AA029328	Human mRNA for KIAA0073 gene partial cds	?
29203	3.4162847487	H28581	ESTs	other
13838	3.4162403464	AA465342	ESTs	other
25585	3.4160353003	AA112389	H4(D10S170)	SS,
34018	3.4145338583	AA191488	Human high-affinity copper uptake protein (hCTR1) mRNA complete cds	TM
251	3.4006042851	D14520	Basic transcription element binding protein 2	other
3778	3.4004516201	U09848	Zinc finger protein 139 (clone pHZ-37)	other
24535	3.3964397637	Z38409	ESTs	other
16858	3.3925194041	AA055759	Human mRNA for KIAA0128 gene partial cds	TM
16127	3.3921645927	AA004669	ESTs	other
36683	3.3841316491	AA432268	ESTs	other
26149	3.3809497785	AA250824	ESTs Weakly similar to ZINC FINGER PROTEIN 91 [H.sapiens]	other
4011	3.3798093471	U20536	Human cysteine protease Mch2 isoform alpha (Mch2) mRNA complete cds	other
41001	3.3794250205	N78844	ESTs	other
5660	3.3789336731	X16396	NAD-DEPENDENT METHYLENETETRAHYDROFOLATE DEHYDROGENASE	SS,
19204	3.3776332343	H11629	ESTs	other
42323	3.3768515979	T98152	Fibrillin 2	SS,
26928	3.3725378868	AA342580	ESTs	SS,
20497	3.369285912	N52565	ESTs	other
19226	3.36674249	H12455	ESTs	other
36267	3.3606641838	AA424046	ESTs	other
32257	3.3559796018	R54726	DNA-REPAIR PROTEIN XRCC1	other
17365	3.3522214732	AA101551	ESTs	other
15296	3.3491193196	W16684	ESTs Moderately similar to Similar to S.cerevisiae hypothetical protein L3111 [H.sapiens]	other
17675	3.3485870272	AA134064	ESTs	TM
40332	3.3456469589	H97565	Homo sapiens mRNA from chromosome 5q21-22 clone A3-A	other
7219	3.3385684843	AA056319	Homo sapiens protein phosphatase 2A B56-epsilon (PP2A) mRNA complete cds	other
10006	3.3322827922	N81193	Homo sapiens mRNA for KIAA0628 protein complete cds	?
33985	3.3276877441	AA181580	Homo sapiens importin beta subunit mRNA complete cds	other
9570	3.3263855302	H85169	Homo sapiens sodium/myo-inositol cotransporter (SLC5A3) gene complete cds	other
37551	3.3155406577	AA456679	ESTs	other
886	3.3111782759	D88613	Human mRNA for hGCMa complete cds	other
23650	3.3069426629	T86293	ESTs	other
18367	3.3007433533	AA224180	ESTs Moderately similar to ovarian-specific protein [R.norvegicus]	?
42494	3.2908070546	W89385	H.sapiens NuMA gene (Clone T33)	other
14310	3.2753564861	AA598412	ESTs Highly similar to HYPOTHETICAL TRP-ASP REPEATS CONTAINING PROTEIN IN PMT6-PCT1 INTERGENIC REGION [Saccharomyces cerevisiae]	SS, TM

FIGURE 8 (cont.)

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19233	3.274416299	H12634	ESTs	other
42283	3.2731086284	T94343	Homo sapiens M962 protein spliced isoform 2 mRNA complete cds	other
12809	3.271352097	AA424406	ESTs	other
36285	3.2696023617	AA424469	ESTs	other
21555	3.2666296446	R33073	EST	?
13767	3.2665695616	AA463234	ESTs	TM
4738	3.2661591937	U58766	Human FX protein mRNA complete cds	other
7258	3.263106866	AA075427	ESTs	other
17041	3.2629042076	AA070364	EST - RC_AA070364	?
15504	3.2616745245	V28362	ESTs	other
23793	3.2611829896	T90971	EST - RC_T90971	other
18214	3.2572346955	AA196635	ESTs	TM
7401	3.257164123	AA094800	Human translation initiation factor eIF3 p66 subunit mRNA complete cds	other
18912	3.2553600001	F10913	Homo sapiens clone 23617 unknown mRNA partial cds	other
36317	3.2509495347	AA425089	Human mRNA for KIAA0334 gene complete cds	?
9410	3.2507279851	H20443	H.sapiens mRNA for TRE5	other
2146	3.2464307696	L41390	EST - L41390	?
18683	3.240814336	F04258	ESTs Highly similar to INORGANIC PYROPHOSPHATASE [Bos taurus]	?
33891	3.2392191408	AFFX-HUMTFRR/M11507_M	AFFX-HUMTFRR/M11507_M	?
14435	3.2372161315	AA608730	ESTs Weakly similar to ELONGATION FACTOR 1-ALPHA [Giardia intestinalis]	other
9584	3.2363829855	H88128	ESTs Highly similar to GTP-BINDING PROTEIN LEPA [Pseudomonas fluorescens]	other
22061	3.2340098572	R49216	ESTs	TM
35786	3.233287605	AA410223	EST - RC_AA410223	?
37403	3.2261852043	AA453613	ESTs	other
15796	3.2260359988	X16889	ALPHA-GALACTOSIDASE A PRECURSOR	SS.
15840	3.2257932439	X70944	PTB-ASSOCIATED SPLICING FACTOR	other
7518	3.2252170427	AA147144	EST - AA147144	other
32335	3.2228388982	R78248	ESTs	other
3256	3.2180538038	M92439	130 KD LEUCINE-RICH PROTEIN	other
4400	3.2173888081	U41387	Human Gu protein mRNA partial cds	other
7681	3.2074414299	AA206983	Homo sapiens mRNA for DRIM protein	other
15676	3.2041299443	W68649	ESTs	TM
39590	3.2038853621	F09281	ESTs	other
26883	3.1980022253	AA291921	ESTs Weakly similar to putative p150 [H.sapiens]	?
9808	3.1920380384	M80627	Transcription factor 12 (HTF4 helix-loop-helix transcription factors 4)	other
27755	3.1900699454	AA453444	ESTs	other
29983	3.1882280623	N26011	ESTs	?
21350	3.1876957756	R15846	ESTs	other
11981	3.1870525747	AA280928	ESTs	other
23930	3.1817500097	T96690	ESTs Weakly similar to HIII ALU SUBFAMILY J WARNING ENTRY HIII [H.sapiens]	other
30399	3.1792054412	N45226	EST	?
22286	3.1781890049	R59312	ESTs	other
13494	3.1673900969	AA453431	ESTs	TM
12908	3.1530533441	AA427579	ESTs	other
22319	3.1468419301	R60567	ESTs	TM
31309	3.1466750623	N66818	ESTs	TM
31192	3.1458779823	N64406	ESTs	other
11288	3.144853134	AA196512	ESTs	TM
170	3.1430726349	D00596	Thymidylate synthase	?
5307	3.1347905628	U90549	Human non-histone chromosomal protein (NHC) mRNA complete cds	other

FIGURE 8 (cont.)

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26105	3.1311103325	AA243133	Homo sapiens serine/threonine kinase (BTAk) mRNA complete cds	other
11659	3.1281786108	AA251909	Homo sapiens MAD3-like protein kinase mRNA complete cds	other
19177	3.124408565	H10984	ESTs	TM
8389	3.1241545824	AA425230	ESTs	TM
34087	3.1216555797	AA205125	Protein serine/threonine kinase sik2	other
25001	3.1209327466	AA004718	ESTs Weakly similar to BAP31 protein [H.sapiens]	other
14149	3.1198500308	AA489665	ESTs	other
10167	3.1191986823	R55076	ESTs	other
17380	3.1071055868	AA102566	ESTs	other
42397	3.1044680628	W42928	ESTs	other
14935	3.1042015743	T94828	ESTs Weakly similar to GA BINDING PROTEIN BETA-2 CHAIN [H.sapiens]	other
41673	3.1030349819	R78618	ESTs Weakly similar to GTP-binding protein rab10 [R.norvegicus]	other
2750	3.1026223619	M35999	Integrin beta 3 (platelet glycoprotein IIIa antigen CD61)	?
3190	3.1026223619	M86808	PYRUVATE DEHYDROGENASE E1 COMPONENT ALPHA SUBUNIT TESTIS-SPECIFIC FORM PRECURSOR	?
17406	3.0999394188	AA112979	Homo sapiens mRNA for VRK1 complete cds	other
598	3.0912414004	D59253	Homo sapiens mRNA for low molecular mass ubiquitinone-binding protein complete cds	other
29348	3.0802365759	H69021	ESTs	other
14130	3.0744457534	AA489041	ESTs	other
14134	3.069660341	AA489080	ESTs Highly similar to phosphorylation regulatory protein HP-10 [H.sapiens]	other
42421	3.0684159011	W45491	ESTs Weakly similar to T23G11.7 [C.elegans]	other
15723	3.0660746209	W79060	ESTs Highly similar to ribosome-binding protein p34 [R.norvegicus]	other
11140	3.0650815198	AA158132	ESTs Highly similar to YSA1 PROTEIN [Saccharomyces cerevisiae]	other
28531	3.0649767987	C20679	ESTs	other
2021	3.0628707497	L34409	Homo Sapiens (clone B3B3E13) chromosome 4p16.3 DNA fragment	?
14522	3.058260163	AA610108	ESTs Highly similar to PROBABLE PEPTIDYL-PROLYL CIS-TRANS ISOMERASE C21E11.05C [Schizosaccharomyces pombe]	SS,
28853	3.0545821815	N22162	ESTs	other
15962	3.0521475703	Z21420	ESTs	other
6541	3.0509806038	X95632	Human Abi Interactor 2 (Abi-2) mRNA complete cds	other
13229	3.0485366337	AA443811	ESTs	other
27315	3.046622812	AA424038	ESTs	other
13621	3.0302306369	AA456821	ESTs Highly similar to BONE MORPHOGENETIC PROTEIN 1 PRECURSOR [Mus musculus]	other
35929	3.0269182409	AA412429	ESTs	other
17925	3.0253428426	AA164209	Homo sapiens RRM RNA binding protein Gyr-rbp (GRY-RBP) mRNA complete cds	other
5053	3.0249536782	U76992	Human Tat-SF1 mRNA complete cds	other
15060	3.0213293848	U54999	Human LGN protein mRNA complete cds	other
17757	3.0205801351	AA147224	EST	?
19050	3.0192379314	H05509	ESTs	other
26530	3.0176823278	AA278650	ESTs	other
16806	3.0158779932	AA053258	Homo sapiens mRNA for KIAA0648 protein partial cds	TM
29088	3.0149440394	F13700	Homo sapiens ribonuclease P protein subunit p40 (RPP40) gene complete cds	other
22960	3.0141862421	T10272	ESTs	other
33585	3.0121672451	W93000	ESTs	other
220	3.0109180714	D13627	Human mRNA for KIAA0002 gene complete cds	TM
4298	3.0024671064	U36448	Human Ca2+-dependent activator protein for secretion mRNA complete cds	TM
7445	2.9995643641	AA104023	ESTs	?
40903	2.9990347068	N68670	ESTs	?
18055	2.9973386648	AA179387	ESTs	other
7282	2.9962792596	AA083339	ESTs	other

FIGURE 8 (cont.)

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9348	2.9949017671	H03686	ESTs	TM
806	2.9877476515	D87009	Human (lambda) DNA for immunoglobulin light chain	?
38447	2.9876031644	AA504255	Human protein kinase ATR mRNA complete cds	other
41464	2.9870604981	R46837	ESTs	?
9662	2.9869352306	L19161	TRANSLATIONAL INITIATION FACTOR 2 GAMMA SUBUNIT	other
16976	2.9801154057	AA063625	EST	?
37426	2.9756408909	AA454016	ESTs	other
2588	2.9725080298	M27878	Zinc finger protein 84 (HPF2)	other
15174	2.9695024379	U82987	Human Bcl-2 binding component 3 (bbc3) mRNA partial cds	other
33620	2.9657446567	W93943	ESTs	other
6784	2.965506112	Y11681	Homo sapiens ribosomal protein S12 gene nuclear gene encoding mitochondrial protein complete cds	?
41077	2.9642389716	N95028	ESTs	TM
1932	2.9609965996	L24804	Human (p23) mRNA complete cds	other
39556	2.9588964022	F03738	ESTs	other
16108	2.9574232912	AA002258	ESTs	SS
32156	2.9574232912	R40381	ESTs	?
13617	2.9552305838	AA456646	ESTs	other
11989	2.955203991	AA281251	ESTs Weakly similar to trithorax protein trxII [D.melanogaster]	other
6056	2.947654132	X68194	Pericycysin (human keratinocyte line HaCaT mRNA 2106 nt)	TM
15446	2.9445456286	W27374	Homo sapiens 10kD protein (BC10) mRNA complete cds	other
38086	2.9445277634	AA482557	EST	?
13878	2.9444133384	AA476604	ESTs	other
6209	2.9422425032	X76770	H.sapiens PAP mRNA	other
388	2.9357591919	D28791	Phosphatidylinositol glycan class A (paroxysmal nocturnal hemoglobinuria)	?
1351	2.9266145582	HG4755-HT5203	EST - HG4755-HT5203	?
42624	2.9266145582	W87804	ESTs	other
34895	2.9242794509	AA311972	ESTs	other
20157	2.9214162976	N23393	ESTs	other
29248	2.9188102156	H52918	ESTs	?
4893	2.9178533564	U66615	Human SW/SNF complex 155 KDa subunit (BAF155) mRNA complete cds	other
10104	2.9150324884	R23855	ESTs	TM
15039	2.9147218324	U46116	Protein tyrosine phosphatase receptor type gamma polypeptide	?
1605	2.9141775797	L00058	V-myc avian myelocytomatosis viral oncogene homolog	?
4536	2.907560336	U48705	Receptor protein-tyrosine kinase EDDR1	?
10173	2.905710598	R56678	ESTs Weakly similar to cell division control protein CDC21 [H.sapiens]	?
26555	2.9056210172	AA279071	ESTs Weakly similar to T08A11.2 [C.elegans]	other
4401	2.9047655582	U41515	Human deleted in split hand/split foot 1 (DSS1) mRNA complete cds	other
21009	2.8995011918	N90401	ESTs	TM
3602	2.894817322	U01317	HEMOGLOBIN EPSILON CHAIN	?
4833	2.8919254016	U63455	Sulfonylurea receptor (hyperinsulinemia)	?
36200	2.8912301426	AA421164	ESTs	?
26645	2.8898309441	AA281076	ESTs	other
35299	2.8887661574	AA398622	Transcription factor 6-like 1 (mitochondrial transcription factor 1-like)	other
9804	2.8880347344	M74558	Human SIL mRNA complete cds	other
5216	2.8877977515	U83410	Human CUL-2 (cul-2) mRNA complete cds	other
12313	2.8847621603	AA397916	ESTs	other
5928	2.8836060438	X62048	WEE1-LIKE PROTEIN KINASE	?
39586	2.8818258313	F09155	ESTs	TM
34758	2.8776214637	AA287680	EST	?
18199	2.8753649024	AA195318	ESTs	other

FIGURE 8 (cont.)

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19867	2.8720974689	H61476	ESTs	?
6081	2.8679372936	X69398	CD47 antigen (Rb-related antigen integrin-associated signal transducer)	SS, TM
5254	2.862087239	U06782	Human 26S proteasome-associated pad1 homolog (POH1) mRNA complete cds	other
13579	2.8570620484	AA455967	Human neuronal PAS2 (NPAS2) mRNA complete cds	?
1117	2.8568053461	HG3075-HT3236	EST - HG3075-HT3236	?
20533	2.8564678641	N54407	ESTs	TM
38495	2.8562453397	AA505118	Human nucleoporin 98 (NUP98) mRNA complete cds	other
33729	2.8548155651	Z39654	EST	?
2028	2.8532776139	L35035	RIBOSE 5-PHOSPHATE ISOMERASE	other
27374	2.8520674335	AA425816	ESTs Weakly similar to Y53C12A.3 [C.elegans]	other
19404	2.8518690748	H20568	ESTs	other
26108	2.8504706329	AA243189	ESTs	SS,
4189	2.8439972255	U30930	UDP glycosyltransferase 8 (UDP-galactose ceramide galactosyltransferase)	TM
16708	2.8427388072	AA043944	ESTs	other
357	2.8350474214	D26156	Human mRNA for transcriptional activator hSNF2b complete cds	other
26045	2.8315740098	AA236276	ESTs	other
17796	2.8312342777	AA150435	ESTs	other
8059	2.8288722809	AA310967	ESTs Weakly similar to T04A8.11 [C.elegans]	other
40914	2.827999584	N69220	ESTs	other
27169	2.8263163852	AA410287	H.sapiens mRNA for basic transcription factor 2.34 kD subunit	other
21358	2.8262413945	R16079	ESTs	other
3572	2.8261469131	S87759	Protein phosphatase 2C alpha [human teratocarcinoma mRNA 2346 nt]	other
11877	2.8259099942	AA262727	ESTs	other
1653	2.8234017508	L05424	CD44 antigen (cell adhesion molecule)	?
24645	2.8131264428	Z39106	ESTs	other
35830	2.8126257031	AA411448	ESTs	TM
4433	2.8114422177	U43279	EST - U43279	?
20151	2.8109454503	N22895	Homo sapiens clone 1400 unknown protein mRNA partial cds	other
38648	2.8084431065	AA598267	EST - RC_AA598267	other
7777	2.8071817929	AA236820	ESTs	other
32845	2.80583194	W31566	EST	?
28258	2.8043934182	AA505133	ESTs	other
6853	2.798263202	Z22951	TRANSCRIPTION FACTOR P65	?
35944	2.7913872996	AA412488	ESTs	?
30648	2.7866523676	N50971	ESTs	?
18965	2.7857482775	H01411	ESTs	TM
8616	2.785444221	AA460077	ESTs	other
14945	2.7838257917	T99606	ESTs Weakly similar to F35G2.2 [C.elegans]	other
8375	2.7805657722	AA422160	H.sapiens NAP (nucleosome assembly protein) mRNA complete cds	other
34929	2.7792111121	AA342084	EST - RC_AA342084	other
326	2.7786978435	D21262	Human mRNA for KIAA0035 gene partial cds	other
27057	2.7781218063	AA400998	ESTs	SS,
36292	2.7746002184	AA424513	EST - RC_AA424513	other
6480	2.7735431318	X91788	H.sapiens mRNA for Icn protein	other
15424	2.7731675808	W27054	APOLIPOPROTEIN AI REGULATORY PROTEIN-1	other
11602	2.7730818255	AA243007	ESTs	?
18175	2.77056686	AA194730	ESTs	?
25202	2.7698585996	AA034527	EST	?
1681	2.7697545972	L07493	Replication protein A (E coli RecA homolog RAD51 homolog)	other
14566	2.767984858	AA621122	ESTs	other
25614	2.7633374335	AA115769	ESTs	other

FIGURE 8 (cont.)

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14182	2.7606048934	AA490805	ESTs	other
31599	2.7591187958	N72196	EST	other
18253	2.7471964081	AA206370	ESTs	other
6193	2.7442487702	X76092	Regulatory factor (trans-acting) 3	other
22911	2.7433449859	T03865	ESTs	other
35549	2.743246906	AA401274	Homo sapiens RRM RNA binding protein Gry-1bp (GRY-RBP) mRNA complete cds	other
35955	2.7389431758	AA412528	ESTs Weakly similar to ORF2 consensus sequence encoding endonuclease and reverse transcriptase minus RNaseH [R.norvegicus]	other
17642	2.7377607284	AA132983	ESTs Moderately similar to C-1-TETRAHYDROFOLATE SYNTHASE CYTOPLASMIC [H.sapiens]	other
6131	2.7371784571	X72841	Human retinoblastoma-binding protein (RbAp46) mRNA complete cds	other
41429	2.7347564467	R44994	ESTs	other
17052	2.7323944161	AA070815	EST - RC_AA070815	other
34243	2.7294147034	AA235050	ESTs	?
22937	2.7284347248	T10065	Homo sapiens TLS-associated protein TASR-2 mRNA complete cds	other
5183	2.7243199196	U82130	Human tumor susceptibility protein (TSG101) mRNA complete cds	other
30837	2.7231409239	N54416	ESTs	other
16243	2.7228028265	AA012802	ESTs	TM
19954	2.7215193495	H80100	ESTs	other
6444	2.720441384	X69750	H.sapiens mRNA for TGIF protein	other
5916	2.7192579481	X61072	Human mRNA for T cell receptor clone IGRA17	SS,
6240	2.7168544194	X78627	H.sapiens mRNA for tranlin	?
42116	2.7144176166	T69924	EST - RC_T69924	other
7701	2.7107230468	AA215333	ESTs	TM
17568	2.7096978968	AA128905	ESTs	TM
42534	2.7086014274	W73189	Homo sapiens protein-tyrosine kinase EPHB2v (EPHB2) mRNA complete cds	SS, TM
29813	2.708372123	N21111	ESTs	other
38898	2.7067394943	AA609458	ESTs	other
10316	2.7055636457	R88880	ESTs Moderately similar to zinc finger protein [M.musculus]	other
14769	2.7040821985	S54641	HZF-16	other
32961	2.7012196407	W38366	Human mRNA for KIAA0005 gene complete cds	other
35273	2.6975345483	AA398507	ESTs	other
10180	2.6960696303	R60100	ESTs	?
32563	2.6955462902	T27697	Human mRNA for KIAA0036 gene complete cds	other
34502	2.6948574449	AA262768	ESTs	TM
13223	2.6912995353	AA443720	ESTs	other
8494	2.6908515739	AA443460	ESTs	other
7776	2.6900717525	AA236771	ESTs	other
10400	2.6898958951	AA007234	ESTs	other
1130	2.6897527619	HG3132-HT3308	EST - HG3132-HT3308	?
2379	2.6874247447	M16937	Human homeo box c1 protein mRNA complete cds	TM
18906	2.6861450774	F10868	Human SH3 domain-containing protein SH3P18 mRNA complete cds	?
34796	2.6853510115	AA291259	ESTs	TM
41955	2.6821406177	T33311	Neuronal pentraxin II	other
2009	2.6791061739	L33881	Protein kinase C iota	?
33688	2.6775081286	Z38501	ESTs Weakly similar to PROBABLE E5 PROTEIN [Human papillomavirus type 58]	other
1385	2.6771402807	HG884-HT884	EST - HG884-HT884	?
24758	2.6756080868	Z40075	ESTs	other
7620	2.6742248913	AA192484	ESTs Weakly similar to MITOCHONDRIAL INNER MEMBRANE PROTEASE SUBUNIT 2 [S.cerevisiae]	other
30733	2.6739544496	N52078	Homo sapiens mRNA for KIAA0637 protein complete cds	other
21256	2.6723253055	R09195	Homo sapiens mRNA for KIAA0564 protein partial cds	other
40528	2.669020458	N29325	ESTs Highly similar to 47 KD PROTEIN [Pseudomonas]	other

FIGURE 8 (cont.)

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			chlororaphis]	
25285	2.6685455408	AA045083	VITAMIN K-DEPENDENT GAMMA-CARBOXYLASE	other
9296	2.667949532	D82775	ESTs Weakly similar to unknown [S.cerevisiae]	SS,
12174	2.6669305328	AA292128	ESTs	other
38357	2.6652770538	AA491265	EST	TM
3154	2.6619596806	M83712	Cholinergic receptor nicotinic alpha polypeptide 5	TM
7383	2.655440738	AA093834	ESTs Weakly similar to HYPOTHETICAL 16.8 KD PROTEIN IN SMY2-RPS101 INTERGENIC REGION [S.cerevisiae]	other
1923	2.6530372325	L23808	Matrix metalloproteinase 12 (macrophage elastase)	SS,
24906	2.6527048053	Z41840	ESTs	other
34726	2.6495430564	AA287278	ESTs	SS,
30407	2.6495430564	N45983	ESTs	TM
20408	2.6459891347	N48787	ESTs Moderately similar to !!! ALU SUBFAMILY SC WARNING ENTRY !!! [H.sapiens]	other
7158	2.6455059455	AA037206	ESTs	TM
26286	2.6445109706	AA253351	ESTs	?
19822	2.6431968212	H58684	ESTs	?
12379	2.6428192941	AA399418	Homo sapiens mRNA for JM23 protein complete coding sequence (clone IMAGE 34581 and IMAGE 45355 and LLNLc1101133Q7 (RZPD Berlin))	other
22698	2.6396306055	R89287	ESTs	other
24161	2.6394502284	W58015	ESTs	other
9558	2.6370149706	H81497	ESTs	TM
18104	2.6358767288	AA188801	ESTs	other
24882	2.6357248889	Z41563	ESTs	other
40038	2.6347974764	H69485	ESTs	other
8865	2.6344845492	AB002359	Human mRNA for KIAA0361 gene KIAA0361 protein	other
22148	2.6288326966	R51831	ESTs	other
4627	2.6277060831	U51990	Human hPrp18 mRNA complete cds	other
8394	2.6275394634	AA426156	ESTs	TM
20422	2.6272599716	N49300	ESTs	other
41602	2.6258613824	R67258	ESTs Moderately similar to rhotein [M.musculus]	other
612	2.6257836682	D63480	Human mRNA for KIAA0146 gene partial cds	TM
4821	2.619521444	U62801	Human protease M mRNA complete cds	SS, TM
16807	2.617722928	AA053296	ESTs	other
15288	2.6173997018	W07562	ESTs Moderately similar to rA8 [R.norvegicus]	other
38023	2.6135617291	AA481066	ESTs	other
23822	2.6120077647	T91715	ESTs Highly similar to HYPOTHETICAL 103.6 KD PROTEIN IN COX5B-PFK26 INTERGENIC REGION [Saccharomyces cerevisiae]	TM
10951	2.6116018519	AA126719	ESTs	other
6150	2.6113980879	X74262	RETINOBLASTOMA BINDING PROTEIN P48	other
39336	2.6109987712	C20945	ESTs Highly similar to HYPOTHETICAL 54.2 KD PROTEIN IN CDC12-ORC6 INTERGENIC REGION [Saccharomyces cerevisiae]	other
17793	2.6102158178	AA150242	ESTs Highly similar to modulator recognition factor 2 [H.sapiens]	other
26891	2.6085107387	AA292659	ESTs	other
2175	2.607468576	L42621	Homo sapiens Ly-9 mRNA complete cds	TM
10642	2.6048724507	AA040149	Human Chromosome 16 BAC clone CIT987SK-A-270G1	other
15026	2.6031453592	U41816	Human C-1 mRNA complete cds	other
7699	2.6019047419	AA215299	Homo sapiens chromosome 19 cosmid R30783	other
6543	2.6011828937	X95654	Homo sapiens mRNA for SCP-1 complete cds	other
20636	2.5993684878	N62122	ESTs	other
11308	2.5993311375	AA207114	ESTs	other
4086	2.5966362866	U24704	Human antileukotriene factor-1 mRNA complete cds	other
38615	2.5963996726	AA598938	EST - RC_AA598938	other
11819	2.5961501969	AA258189	ESTs	other

FIGURE 8 (cont.)

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37433	2.5957446266	AA454103	ESTs	other
28270	2.5939657529	AA521186	ESTs	TM
5587	2.5932338399	X13482	U2 SMALL NUCLEAR RIBONUCLEOPROTEIN A'	other
19841	2.5930132063	H59617	ESTs Highly similar to UBIQUITIN-CONJUGATING ENZYME E2-17 KD [Drosophila melanogaster]	other
10655	2.5925442731	AA040882	ESTs	?
14053	2.5899324577	AA485147	ESTs Highly similar to HYPOTHETICAL 83.6 KD PROTEIN R05D3.2 IN CHROMOSOME III [Caenorhabditis elegans]	other
31574	2.5883094453	N71303	EST	?
7614	2.5870699315	AA187579	ESTs Weakly similar to Yel007c-ap [S.cerevisiae]	other
37971	2.5847445397	AA479195	EST	?
7090	2.5845365105	AA009913	Homo sapiens diphthamide biosynthesis protein-2 (DPH2) mRNA complete cds	other
17852	2.5841100415	AA156360	ESTs	other
24219	2.5823376094	W69960	ESTs	other
19070	2.5813645258	H05970	Human clone 23860 mRNA sequence	other
17719	2.5803606155	AA136569	EST	?
38669	2.579196791	AA599694	Human mRNA for KIAA0133 gene complete cds	TM
20982	2.5783957078	N79565	ESTs	TM
9158	2.5731838907	D31446	Homo sapiens breakpoint cluster region protein 1 (BCRG1) mRNA complete cds	other
11362	2.5731137778	AA227261	ESTs	other
8613	2.5723119462	AA459555	Homo sapiens mRNA for KIAA0646 protein partial cds	TM
13866	2.5715997844	AA476319	ESTs	SS,
10303	2.5712815907	R86178	Ataxia telangiectasia mutated (includes complementation groups A C and D)	?
22299	2.567916035	R59601	EST	?
18257	2.5673459608	AA206591	EST - RC_AA206591	other
20555	2.5654242568	N55168	ESTs	other
39552	2.5645918108	F03605	PUTATIVE 60S RIBOSOMAL PROTEIN	other
27530	2.5631130948	AA435999	ESTs	other
1795	2.5608471476	L13434	Human chromosome 3p21.1 gene sequence complete cds	?
14746	2.5603154966	D60354	Human mRNA for KIAA0007 gene partial cds	other
2993	2.5587815672	M64929	Protein phosphatase 2 (formerly 2A) regulatory subunit B (PR 52) alpha isoform	other
19191	2.5545260975	H11297	ESTs	other
12986	2.5507999853	AA430032	ESTs Moderately similar to PTTG gene product [R.norvegicus]	?
15452	2.5488533884	V27451	Human Cdc5-related protein (PCDC5RP) mRNA complete cds	other
18003	2.5465671712	AA171692	ESTs	other
24198	2.5461854497	W67524	Human protein-tyrosine phosphatase (HU-PP-1) mRNA partial sequence	TM
42653	2.5447526827	W92703	ESTs	other
26446	2.544106171	AA258796	EST Weakly similar to putative p150 [H.sapiens]	?
30438	2.5368548574	N47204	ESTs Weakly similar to C50F4.12 [C.elegans]	other
36365	2.5362912735	AA425893	ESTs Weakly similar to probable CBP3 protein homolog [C.elegans]	other
26135	2.535658968	AA243765	ESTs	other
41885	2.5349932888	T23449	ESTs Moderately similar to ZNF127-Xp [H.sapiens]	SS,
15457	2.5343485968	W27560	ESTs	other
27748	2.5320767519	AA453159	Human kinesin-like spindle protein HKSP (HKSP) mRNA complete cds	other
32315	2.5302979959	R69840	ESTs Weakly similar to LINE-1 REVERSE TRANSCRIPTASE HOMOLOG [Nycticebus coucang]	?
25310	2.5274401679	AA046745	ESTs	other
42720	2.5222453766	Z39436	ESTs	other
12939	2.5200945911	AA428204	ESTs	other
30746	2.5198420998	N52243	ESTs	other
2222	2.5193624578	L76703	Homo sapiens protein phosphatase 2A B56-epsilon (PP2A) mRNA complete cds	?
11809	2.5191765545	AA243303	ESTs	TM

FIGURE 8 (cont.)

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9658	2.5185814336	L16991	Deoxythymidylate kinase	other
12210	2.5172044681	AA293774	ESTs Weakly similar to PROBABLE TRYPTOPHANYL-TRNA SYNTHETASE MITOCHONDRIAL [C.elegans]	other
3563	2.5169918533	S83364	EST - S83364	other
42407	2.5128230047	W44768	Homo sapiens nephrocystin (NPHP1) mRNA partial cds	?
32826	2.5128052161	W20391	Human mRNA for kinesin-related protein partial cds	other
9692	2.5119977110	L37747	LAMIN B1	?
27862	2.5094571267	AA458908	ESTs	TM
33691	2.509287494	Z38630	EST	other
17288	2.5088624644	AA085178	ESTs	SS
9888	2.5076170902	N35449	ESTs Highly similar to HYPOTHETICAL 30.3 KD PROTEIN IN APE1/LAP4-CWP1 INTERGENIC REGION [Saccharomyces cerevisiae]	other
5932	2.5073880985	X62153	Minichromosome maintenance deficient (S. cerevisiae) 3	other
15885	2.5053862932	X95073	H.sapiens mRNA for transtien associated protein X	other
17952	2.5049193223	AA165677	ESTs Weakly similar to F16A11.1 [C.elegans]	other
12197	2.5042458391	AA293206	ESTs	other
6210	2.5042034458	X76942	Homo sapiens golgin-245 mRNA complete cds	other
34047	2.5041917773	AA194166	ESTs Weakly similar to G1 TO S PHASE TRANSITION PROTEIN 1 HOMOLOG [H.sapiens]	other
16929	2.5034461307	AA058952	ESTs	other
26834	2.5028075682	AA287138	ESTs Weakly similar to ASPARTYL-TRNA SYNTHETASE [Thermus aquaticus thermophilus]	other
5157	2.5017270258	U80034	Human mitochondrial intermediate peptidase precursor (MIPEP) mRNA mitochondrial gene encoding mitochondrial protein complete cds	other
38434	2.5005880672	AA497013	ESTs	?
33269	2.5000282771	W72967	ESTs	other
26991	2.4990009911	AA398284	ESTs	other
7590	2.4948786183	AA173505	ESTs Weakly similar to HYPOTHETICAL 46.1 KD PROTEIN IN PHO2-POL3 INTERGENIC REGION [S.cerevisiae]	other
14960	2.4896232864	U05237	Human fetal Alz-50-reactive clone 1 (FAC1) mRNA complete cds	other
13585	2.4866752902	AA455999	ESTs Highly similar to NEUROLYSIN PRECURSOR [Sus scrofa]	other
35901	2.4847673158	AA412151	ESTs	other
38185	2.4826740426	AA487508	Homo sapiens mRNA for KIAA0688 protein complete cds	other
34678	2.4824371274	AA284744	Annexin XI (56kD autoantigen)	other
1424	2.4811113231	J02845	Eukaryotic translation initiation factor 2A	other
16778	2.4800522256	AA047008	ESTs	other
21876	2.4789005203	R43286	EST - RC_R43286	?
17779	2.4695725489	AA149641	ESTs	other
24559	2.4682754649	Z38588	ESTs	other
7781	2.4679471166	AA242904	Homo sapiens proline-rich Gla protein 1 (PRGP1) mRNA complete cds	?
7474	2.4677129013	AA126592	ESTs Weakly similar to No definition line found [C.elegans]	other
34290	2.4675279697	AA236866	ESTs	other
5316	2.4673813483	U90905	Human clone 23574 mRNA sequence	TM
10218	2.4645666539	R68884	ESTs Highly similar to HYPOTHETICAL 44.2 KD PROTEIN IN SCO2-MRF1 INTERGENIC REGION [Saccharomyces cerevisiae]	other
18109	2.4634292267	AA188981	Homo sapiens retinoblastoma-associated protein HEC mRNA complete cds	?
6485	2.4613518897	X92098	H.sapiens mRNA for transmembrane protein mp24	SS, TM
34954	2.4591845976	AA342959	EST - RC_AA342959	?
42558	2.4588830205	W74751	ESTs	other
27444	2.4585750563	AA430160	ESTs Weakly similar to F25H19.7 [C.elegans]	other
21284	2.4582503599	R10301	EST	?
8920	2.4588596729	AF006265	Homo sapiens cancer associated surface antigen (RCAS1) mRNA complete cds	other
30037	2.4544484116	N27439	ESTs	TM
27602	2.4527990177	AA443702	ESTs Weakly similar to W02B12.7 [C.elegans]	TM

FIGURE 8 (cont.)  
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3390	2.4525517032	S59184	RYK receptor-like tyrosine kinase	TM
25040	2.452352841	AA010188	ESTs	other
37713	2.4487800271	AA461317	ESTs	other
40477	2.4477660739	N24006	Homo sapiens BAC clone RG300E22 from 7q21-q31.1	other
29382	2.4470532391	H72914	ESTs	other
35521	2.4465885249	AA400831	ESTs	other
20324	2.4464518504	N35406	Phospholipase C beta 4	SS.
18620	2.4460334893	F02506	ESTs	other
21087	2.4406971835	R00106	EST	?
9950	2.4398530157	N71503	ESTs	other
31965	2.4363228422	N93629	ESTs	SS.
15120	2.4345885403	U73524	Human putative ATP/GTP-binding protein (HEAB) mRNA complete cds	TM
28813	2.4339770686	D59257	Human C-1 mRNA complete cds	other
38082	2.4295434916	AA482284	ESTs	other
34723	2.428289395	AA287115	ESTs	other
7960	2.427332589	AA285277	Homo sapiens brain expressed ring finger protein mRNA complete cds	other
18073	2.4231729031	AA180453	EST	other
36755	2.4222443392	AA435698	EST - RC_AA435698	other
18927	2.4187841215	F11087	ESTs	other
3457	2.4186224787	S74728	Antiquitin	TM
38606	2.4177693475	AA598844	ESTs	other
20967	2.41519947	N76086	ESTs	other
24752	2.4141498374	Z40012	Homo sapiens mRNA for KIAA0587 protein complete cds	other
28443	2.4138974256	AA621611	ESTs	?
452	2.4135942278	D38076	RAN binding protein 1	other
11701	2.4134095351	AA253031	Homo sapiens RRM RNA binding protein Gry-rbp (GRY-RBP) mRNA complete cds	other
13655	2.412509306	AA458919	ESTs Weakly similar to 26S proteasome subunit p44.5 [H.sapiens]	other
24822	2.4119066031	Z40956	ESTs	other
12672	2.4112720798	AA417067	ESTs	other
4836	2.4106618618	U63717	Human osteoclast stimulating factor mRNA complete cds	other
42200	2.4083828799	T83729	EST - RC_T83729	?
10987	2.4076548868	AA132239	ESTs Highly similar to HYPOTHETICAL 47.4 KD PROTEIN IN SHP1-SEC17 INTERGENIC REGION [Saccharomyces cerevisiae]	other
35672	2.4073821434	AA404995	EST - RC_AA404995	other
6224	2.406310553	X77748	Glutamate receptor metabotropic 3	TM
28395	2.404213441	AA610064	ESTs	other
36390	2.4032664297	AA426291	ESTs Weakly similar to No definition line found [C.elegans]	other
21045	2.4031905697	N93403	ESTs	?
4558	2.4024665999	U49379	Human diacylglycerol kinase epsilon DGK mRNA complete cds	TM
12916	2.3998505067	AA427745	ESTs	other
20850	2.3998090334	N69514	ESTs Weakly similar to oxidoreductase [H.sapiens]	other
29759	2.3986103066	H99972	ESTs	other
36786	2.3971559161	AA435815	Human Cdk-associated RS cyclophilin CARS-Cyp mRNA complete cds	other
31942	2.3947415736	N93185	ESTs	other
7097	2.39382714	AA011452	ESTs	other
39462	2.3936147708	D60063	ESTs	other
14420	2.3919915706	AA600322	ESTs Highly similar to AAC-RICH MRNA CLONE AAC3 PROTEIN [Dictyostelium discoideum]	other
34629	2.3916035475	AA282527	EST - RC_AA282527	other
27431	2.3905463084	AA429038	ESTs	TM
6387	2.3904071666	X85372	H.sapiens mRNA for Sm protein F	other
11342	2.3902176276	AA223874	Homo sapiens mRNA for KIAA0704 protein partial cds	other

FIGURE 8 (cont.)  
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1497	2.388369765	J04088	Topoisomerase (DNA) II alpha (170kD)	other
9841	2.3841922016	M95724	Centromere autoantigen C	other
11454	2.3820201875	AA233854	ESTs	TM
29950	2.3807499489	N24902	Homo sapiens mRNA for E1B-55kDa-associated protein	TM
8396	2.3807187289	AA426176	ESTs Weakly similar to Similar to S.cerevisiae hypothetical protein L3111 [H.sapiens]	other
32978	2.3805995259	W42788	Human terminal transferase mRNA complete cds	other
27872	2.3784145648	AA459254	ESTs	other
11623	2.3769685069	AA243617	ESTs	other
26582	2.3766957777	AA279768	ESTs	other
22142	2.3761275381	R51382	Homo sapiens mRNA for KIAA0659 protein partial cds	other
13533	2.3759359586	AA454607	ESTs Highly similar to HYPOTHETICAL 40.2 KD PROTEIN K12H4.3 IN CHROMOSOME III [Caenorhabditis elegans]	other
11534	2.3747649776	AA236223	ESTs	other
5976	2.3709397882	X64229	DEK PROTEIN	other
6231	2.3680994679	X78121	Chorokeremia	TM
2382	2.3677644584	M16967	Coagulation factor V	other
22887	2.3673034941	T03314	ESTs	TM
24371	2.3663729415	W87415	ESTs Weakly similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]	other
25286	2.3658134948	AA045261	ESTs	other
9054	2.3647542793	C02472	ESTs Weakly similar to EBV-INDUCED G PROTEIN-COUPLED RECEPTOR 1 PRECURSOR (Homo sapiens)	other
8163	2.3646144577	AA357394	ESTs	other
12233	2.364077771	AA343513	ESTs Weakly similar to LINE/gp H-chain fusion protein [M.musculus]	SS,
22924	2.3634007127	T08185	ESTs	other
14371	2.361524453	AA599219	ESTs Moderately similar to ALR [H.sapiens]	other
12401	2.3607293644	AA400229	ESTs	other
26169	2.3599633182	AA251089	ESTs Weakly similar to ORF YOR281c [S.cerevisiae]	?
23065	2.3592943521	T23539	ESTs Highly similar to zinc finger protein [M.musculus]	other
20524	2.358218239	N53905	ESTs	other
20837	2.3577032218	N69263	ESTs Highly similar to HEXOKINASE TYPE I [Homo sapiens]	other
18201	2.3573132815	AA195398	Homo sapiens DNA sequence from PAC 434014 on chromosome 1q32.3-41. Contains the HSD11B1 gene for Hydroxysteroid (11-beta) Dehydrogenase 1 the ADORA2BP adenosine A2b receptor LIKE pseudogene the IRF6	other
7813	2.3566868562	AA248297	ESTs	TM
21195	2.3547018746	R07210	ESTs	other
13377	2.3513919997	AA449720	Homo sapiens clone 24706 mRNA sequence	other
9714	2.3487245732	L44367	ESTs	other
41537	2.3460892052	R55673	ESTs	other
17352	2.34595172	AA100925	ESTs	other
11914	2.3446613991	AA278907	ESTs	?
24890	2.3440589932	Z41634	ESTs	other
28796	2.3434458024	D51272	EST - RC_D51272_s	?
36798	2.342525534	AA435870	ESTs Weakly similar to B0564.1 [C.elegans]	other
22491	2.3409294581	R70012	EST	other
4798	2.3403776443	U61538	Human calcium-binding protein chp mRNA complete cds	other
40847	2.3397210986	N66354	ESTs	other
15657	2.3392349306	W63627	Small inducible cytokine A5 (RANTES)	TM
24482	2.3374046148	Z38137	ESTs	other
42022	2.336999603	T53138	Homo sapiens mRNA for hTcf-4	TM
38233	2.3314220199	AA489023	ESTs	other
41221	2.3310635524	R21531	ESTs Weakly similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]	other
8053	2.3297250374	AA309880	ESTs	other

FIGURE 8 (cont.)

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363	2.3275393529	D26528	Human mRNA for RNA helicase complete cds	?
26679	2.3241677574	AA281733	ESTs	other
13407	2.3216524472	AA450200	ESTs	TM
17955	2.3180957399	AA166703	ESTs	TM
31858	2.3160841803	N90680	EST	?
24092	2.3151511584	W42845	Homo sapiens protein tyrosine phosphatase PIR1 mRNA complete cds	SS.
16759	2.3118245547	AA046294	ESTs	other
7861	2.311355404	AA252436	Homo sapiens clone 23797 and 23917 mRNA partial cds	other
41176	2.3111568749	R09379	Natural resistance-associated macrophage protein 2	TM
3860	2.3104335895	U13913	Homolog of Drosophila slowpoke (potassium channel calcium-activated)	TM
40886	2.3077403929	N68149	ESTs Weakly similar to EBV-INDUCED G PROTEIN-COUPLED RECEPTOR 1 PRECURSOR [Homo sapiens]	other
19428	2.3068982601	H22949	EST	?
36080	2.3048383557	AA417282	EST - RC_AA417282	other
27264	2.3043527378	AA418389	ESTs	other
13600	2.3031968696	AA456286	ESTs	other
13552	2.3026988375	AA454943	ESTs	other
15664	2.3025773291	W67456	ESTs Moderately similar to YY1-associated factor 2 [H.sapiens]	other
26583	2.3025403178	AA279774	ESTs	?
37434	2.3013886299	AA454149	EST	?
7833	2.2992574443	AA249300	ESTs	other
3674	2.2985613315	U05237	Human fetal Alz-50-reactive clone 1 (FAC1) mRNA complete cds	other
33694	2.2984566375	Z38770	ESTs	other
11178	2.2972286082	AA167436	ESTs	?
16977	2.2912855384	AA064616	ESTs	other
19799	2.290119924	H57330	EST	?
5948	2.2900738182	X63337	EST - X63337	?
42097	2.2881548729	T66318	Isoleucine-tRNA synthetase	?
24247	2.2881065691	W73010	Ribosomal protein L37	other
40879	2.2870463837	N67816	ESTs Moderately similar to IIII ALU SUBFAMILY SX WARNING ENTRY IIII [H.sapiens]	other
5875	2.2860441014	X59405	Membrane cofactor protein (CD46 trophoblast-lymphocyte cross-reactive antigen)	?
22325	2.2850330577	R60777	ESTs	other
9621	2.2844572929	J05032	ASPARTYL-TRNA SYNTHETASE	other
9239	2.2823045248	D79100	ESTs	other
41997	2.2818672356	T47788	ESTs	other
31105	2.28081752	N63207	EST	?
39565	2.2794194837	F04320	Replication factor C 37-kD subunit	other
7404	2.2793872556	AA094969	Homo sapiens voltage dependent anion channel protein mRNA complete cds	other
6388	2.2788670475	X85373	H.sapiens mRNA for Sm protein G	other
20263	2.2729348551	N31952	ESTs Moderately similar to HYPOTHETICAL 66.5 KD PROTEIN F02A9.5 IN CHROMOSOME III [Caenorhabditis elegans]	other
14529	2.2722894932	AA620307	ESTs	other
21197	2.2718368964	R07320	ESTs	other
26203	2.2692501412	AA490969	ESTs	other
38320	2.2687130032	AA490611	ESTs	other
41625	2.2680307053	R69333	ESTs	other
4674	2.265734645	U54999	Human LGN protein mRNA complete cds	other
28861	2.2637023919	D80037	EST Weakly similar to C50B8.3 [C.elegans]	other
31062	2.2633840539	N62827	ESTs	other
26756	2.2627797292	AA283832	ESTs	other
11567	2.2614480615	AA236747	Homo sapiens mitogen activated protein kinase activated protein kinase gene complete cds	other

FIGURE 8 (cont.)

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25050	2.2605083659	AA011134	ESTs Weakly similar to renin [H sapiens]	TM
41935	2.2593192037	T29681	Human serine kinase mRNA complete cds	other
26895	2.2582367069	AA292765	H. sapiens mRNA for M-phase phosphoprotein mpp5	other
40585	2.2581993468	N34891	Homo sapiens mRNA for KIAA0595 protein partial cds	other
3343	2.2568482074	M97936	SIGNAL TRANSDUCER AND ACTIVATOR OF TRANSCRIPTION 1-ALPHA/BETA	other
42435	2.2532463427	W46994	ESTs	?
5937	2.2489783488	X62534	High-mobility group (nonhistone chromosomal) protein 2	other
21241	2.2477801609	R08617	ESTs	TM
25756	2.2472586561	AA135868	ESTs	TM
34184	2.2459308213	AA227959	Human cysteine protease Mch2 isoform alpha (Mch2) mRNA complete cds	other
8672	2.2450864129	AA477046	ESTs	other
7387	2.2447544716	AA093977	ESTs	other
28822	2.2424116577	D59352	ESTs	TM
18016	2.2410305445	AA173223	ESTs	other
20843	2.239288723	N69352	Homo sapiens mRNA for ATP-dependent RNA helicase #48 complete cds	other
10054	2.2387950133	R10266	ESTs Highly similar to HYPOTHETICAL GTP-BINDING PROTEIN IN PMHO-PAC2 INTERGENIC REGION [Saccharomyces cerevisiae]	other
34094	2.2384154308	AA208088	ESTs	other
41246	2.2380827238	R27296	ESTs	other
22634	2.2346537819	R82837	ESTs	other
19686	2.2319351858	H48502	ESTs	SS,
34568	2.2306030547	AA280609	ESTs Weakly similar to K02B2.3 gene product [C.elegans]	other
28448	2.2295708871	AA621752	Human 26S proteasome-associated pad1 homolog (POH1) mRNA complete cds	other
20909	2.2284835116	N71704	ESTs	other
651	2.2260753259	D78129	EST - D78129	SS, TM
40409	2.2244318492	H99877	Homo sapiens exportin t mRNA complete cds	other
20340	2.224062527	N38825	ESTs	other
20002	2.2233023294	H93005	EST - RC_H93005	other
37321	2.2209252793	AA451898	ESTs	other
8274	2.2208752623	AA402095	ESTs	other
20221	2.2197714612	N29345	ESTs	other
5792	2.2186801223	X54941	CDC28 protein kinase 1	other
4034	2.21808435	U21858	Human transcription initiation factor TFIIID subunit TAFII31 mRNA complete cds	other
36222	2.2149577598	AA421481	ESTs	other
16567	2.2146935655	AA031591	ESTs	other
4721	2.2134595068	U58046	Human mRNA for KIAA0139 gene complete cds	other
28656	2.2125017907	D19708	Human Gu protein mRNA partial cds	TM
20723	2.2113936194	N66093	ESTs	other
6714	2.2062571749	Y08612	H. sapiens mRNA for Nup88 protein	?
19240	2.205583996	H13265	ESTs	other
36447	2.2050784323	AA428188	ESTs	other
11688	2.202413216	AA252672	Homo sapiens diphthamide biosynthesis protein-2 (DPH2) mRNA complete cds	other
21650	2.2018153311	R37938	Homo sapiens KIAA0440 mRNA partial cds	other
14152	2.2015953698	AA489790	Homo sapiens Ran-GTP binding protein mRNA partial cds	other
42657	2.1975280207	W92771	GLYCINE CLEAVAGE SYSTEM H PROTEIN PRECURSOR	other
4642	2.1968027789	U52427	Human RNA polymerase II subunit hSRP7 mRNA complete cds	?
32779	2.1962611079	W02102	ESTs	TM
38341	2.1951559134	AA490967	ESTs	other
11803	2.1921143838	AA257971	ESTs	other
34835	2.190705129	AA292677	ESTs	TM
39085	2.1895804523	AA620599	ESTs	other

FIGURE 8 (cont.)

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4046	2.1877764122	U22376	MYB PROTO-ONCOGENE PROTEIN	?
11600	2.1876723705	AA242868	ESTs Weakly similar to house-keeping protein [M.musculus]	other
5051	2.1866660566	U76638	Human BRCA1-associated RING domain protein (BARD1) mRNA complete cds	other
33917	2.1864855739	AA167323	ESTs	TM
20674	2.1858972155	N63392	ESTs	TM
41031	2.1768902734	N91246	ESTs	?
25114	2.1759894688	AA020923	EST	?
24711	2.1758363153	Z39645	ESTs	other
4733	2.1721786534	U58658	Human unknown protein mRNA within the p53 intron 1 complete cds	other
4871	2.1712198791	U66033	Human glypican-5 (GPC5) mRNA complete cds	other
29733	2.1687028853	H99398	EST	?
23155	2.1678113438	T30550	ESTs	other
34638	2.164515923	AA282987	EST	?
35541	2.1621480372	AA00986	Prothymosin alpha	other
1889	2.1598384252	L20591	Annexin III (lipocortin III)	?
15106	2.1591553963	U68111	PROTEIN PHOSPHATASE INHIBITOR 2	?
40131	2.1583553082	H79779	Homo sapiens histone deacetylase 3 (HDAC3) mRNA complete cds	other
19516	2.158045763	H29207	EST	other
4136	2.1577799237	U28014	ICH-2 PROTEASE PRECURSOR	other
20276	2.1548737104	N32919	ESTs	other
13292	2.1546709291	AA447621	ESTs Highly similar to 40 KD PROTEIN [Borna disease virus]	other
20666	2.154262609	N63165	ESTs	other
6065	2.1526648242	X68560	Sp3 transcription factor	other
18238	2.1516362853	AA205389	ESTs	other
21627	2.1515999154	R37410	EST	?
3438	2.1502571642	S72024	Eukaryotic translation initiation factor 5A	?
34648	2.1498935434	AA283772	ACTIVATOR 1 36 KD SUBUNIT	other
5964	2.1488964343	X63657	Follicular lymphoma variant translocation 1	SS,
13250	2.1466085975	AA446459	ESTs	other
34370	2.1465845856	AA251829	ESTs Weakly similar to HYPOTHETICAL 27.4 KD PROTEIN IN MER2-CPR7 INTERGENIC REGION [Saccharomyces cerevisiae]	other
27996	2.145312871	AA470156	ESTs Weakly similar to dynein 74K chain cytosolic [R.norvegicus]	SS,
4408	2.1398865247	U41745	Human PDGF associated protein mRNA complete cds	other
4187	2.1395632136	U30888	Human tRNA-guanine transglycosylase mRNA complete cds	other
10804	2.1366059886	AA069549	ESTs	other
34552	2.1340290702	AA279985	Human mRNA for KIAA0372 gene complete cds	other
18380	2.1331897016	AA227119	ESTs	other
5223	2.1298428563	U83843	EST - U83843	other
37415	2.1270169134	AA453807	EST	other
14582	2.1260941468	AA621340	ESTs Weakly similar to HYPOTHETICAL 39.6 KD PROTEIN IN MTD1-NUP133 INTERGENIC REGION [Saccharomyces cerevisiae]	other
27756	2.1236471107	AA453447	ESTs	other
13787	2.1232866197	AA463745	ESTs Highly similar to PRE-MRNA SPLICING FACTOR RNA HELICASE PRP22 [Saccharomyces cerevisiae]	other
5173	2.1232706565	U81554	Homo sapiens signal recognition particle 72 (SRP72) mRNA complete cds	other
40029	2.1214337319	H68221	Human E2 ubiquitin conjugating enzyme Ubch5B (UBCH5B) mRNA complete cds	other
19972	2.1193721042	H83639	ESTs	other
23301	2.117519655	T52847	ESTs	other
20504	2.1134521605	N52966	ESTs	other
40145	2.1132200572	H81391	Human mRNA for histamine N-methyltransferase complete cds	other
3461	2.1131164397	S75256	EST - S75256	SS,
41893	2.1124189285	T23611	ESTs	other

FIGURE 8 (cont.)

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39298	2.1092181318	C14805	EST - RC_C14805	other
36021	2.1084566145	AA416876	ESTs Weakly similar to TRANSFORMATION-SENSITIVE PROTEIN IEF SSP 3521 [H.sapiens]	other
8382	2.1077406838	AA424199	ESTs Weakly similar to C50B8.3 [C.elegans]	other
28288	2.1075593303	AA598447	Homo sapiens exportin t mRNA complete cds	other
5807	2.1071009331	X55740	5' nucleotidase (CD73)	?
19747	2.106109599	H53572	ESTs	other
38155	2.1052335506	AA486777	ESTs	TM
924	2.1037724222	HG1112-HT1112	EST - HG1112-HT1112	?
9544	2.1022261514	H72630	ESTs	other
8384	2.1005713227	AA424282	Human 75-kD autoantigen (PM-Sc1) mRNA complete cds	other
25165	2.1005132894	AA027837	Retinitis pigmentosa 3 (X-linked recessive)	SS, TM
24348	2.1000366838	W86469	Tropomyosin alpha chain (skeletal muscle)	?
41401	2.0994968367	R43334	Homo sapiens KIAA0410 mRNA complete cds	other
35340	2.0993762592	AA398900	EST - RC_AA398900	other
10888	2.0990741816	AA112063	ESTs Weakly similar to PRE-MRNA SPLICING HELICASE BRR2 [S.cerevisiae]	other
381	2.0974305874	D28473	Isoleucine-tRNA synthetase	other
22051	2.0971755	R49047	ESTs Weakly similar to III ALU SUBFAMILY J WARNING ENTRY III [H.sapiens]	other
3293	2.096563118	M94893	Testis specific protein Y-linked	TM
11528	2.0954548212	AA236018	ESTs Weakly similar to unknown [S.cerevisiae]	?
11890	2.0952685865	AA278323	Homo sapiens clone 24606 mRNA sequence	TM
13643	2.0952581265	AA458578	Homo sapiens clone 24477 mRNA sequence	other
19927	2.0952547855	H71829	ESTs	other
36511	2.0927695929	AA429632	ESTs	?
2130	2.0925292202	L40407	Homo sapiens thyroid receptor interactor (TRIP9) gene complete cds	?
7193	2.0924678877	AA046768	Homo sapiens clone TUAB Cri-du-chat region mRNA	TM
5448	2.0921643167	X02751	Neuroblastoma RAS viral (v-ras) oncogene homolog	?
35956	2.0875765163	AA412533	ESTs	other
7525	2.0870133892	AA149259	ESTs	other
39592	2.0862891765	F09351	ESTs Weakly similar to weakly similar to S. cerevisiae PTM1 precursor [C.elegans]	TM
28029	2.0855738844	AA478479	ESTs	other
18425	2.0855157851	AA232103	ESTs	other
23494	2.0843308862	T70045	ESTs Weakly similar to HYPOTHETICAL 33.2 KD PROTEIN F26A3.7 IN CHROMOSOME I [C.elegans]	other
30882	2.0840312831	N56906	EST	?
32597	2.0839196473	T47333	Human TFIIID subunit TAFII55 (TAFII55) mRNA complete cds	other
33368	2.0838178514	W80814	ESTs	other
10259	2.0829121213	R77527	ESTs	other
21882	2.0825457608	R43365	ESTs	other
20590	2.0820571859	N58146	ESTs	other
12907	2.0807802388	AA427577	ESTs	other
22958	2.0770089467	T10264	ESTs	other
42044	2.0762746251	T58753	ESTs	other
4210	2.0750374179	U31814	Human transcriptional regulator homolog RPD3 mRNA complete cds	other
39	2.074214716	AB003698	Homo sapiens mRNA for Cdc7-related kinase complete cds	other
14350	2.0739236064	AA598831	ESTs	TM
29840	2.0729224128	N21680	ESTs	other
25593	2.0715918096	AA113149	Homo sapiens IPL (IPL) mRNA complete cds	other
26071	2.0708411247	AA236880	Protein phosphatase 2A regulatory subunit B' alpha-1	other
26529	2.0699045563	AA278594	EST	?
12154	2.0692192056	AA291293	ESTs	other
18817	2.0684614007	F10077	ESTs	?

FIGURE 8 (cont.)

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6635	2.0674931973	X99585	H sapiens mRNA for SMT3B protein	other
6681	2.066065203	Y00971	Phosphoribosyl pyrophosphate synthetase 2	other
22077	2.0647745388	R49482	ESTs	other
11752	2.0645929355	AA256042	ESTs	other
41257	2.0634413934	R31680	ESTs	SS.
6904	2.0622381932	Z34897	Histamine receptor H1	TM
16879	2.060262971	AA056538	ESTs	other
38040	2.0595449295	AA481403	ESTs	other
4111	2.0567536207	U26312	Human heterochromatin protein HP1Hs-gamma mRNA complete cds	other
32878	2.0546812272	W37448	ESTs	TM
21743	2.0543668448	R40576	ESTs Moderately similar to !!! ALU SUBFAMILY SX WARNING ENTRY !!!! [H.sapiens]	?
25968	2.0525018401	AA234935	ESTs	other
24659	2.0506511898	Z39211	Homo sapiens GDP-L-fucose pyrophosphorylase (GFPF) mRNA complete cds	other
38030	2.0505994824	AA481148	ESTs	other
61	2.0484705331	AC002115	Cytochrome c oxidase subunit VIb	?
6306	2.0474040935	X81625	EUKARYOTIC PEPTIDE CHAIN RELEASE FACTOR SUBUNIT 1	?
8203	2.0473464771	AA382517	EST - AA382517	other
34357	2.0469305727	AA251430	ESTs Highly similar to RAS-RELATED PROTEIN RAB-10 [Canis familiaris]	other
36972	2.0468599712	AA442767	Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein beta polypeptide	other
28156	2.0459278063	AA489057	H.sapiens mRNA for nuclear protein SA-2	?
24434	2.0456952222	W92787	ESTs	other
33508	2.0449481783	W88772	Human DNA sequence from cosmid F0811 on chromosome 6. Contains Daux BING1 Tapesin RGL2 KE2 BING4 BING5 ESTs and CpG islands	other
37681	2.0449346104	AA460675	H.sapiens mRNA for TRES	other
27125	2.0448698236	AA405505	Homo sapiens mRNA for putative RNA helicase 3' end	other
3780	2.0445300752	U09851	Zinc finger protein 148 (pH2-52)	other
9112	2.0443252757	D16611	Coproporphyrinogen oxidase (coproporphyrin harderoporphyria)	TM
8357	2.0442442223	AA418921	ESTs Highly similar to RSP5 PROTEIN [Saccharomyces cerevisiae]	other
9133	2.0436113204	D30946	ESTs Highly similar to TRANSLOCAN-ASSOCIATED PROTEIN GAMMA SUBUNIT [Rattus norvegicus]	TM
7519	2.0414123824	AA147425	EST - AA147425_s	other
14701	2.0413755305	D59324	ESTs	other
380	2.0411495076	D28423	EST - D28423	?
30571	2.0348528804	N49595	ESTs	other
825	2.0329522889	D87328	Holocarboxylase synthetase (biotin-(propionyl-Coenzyme A-carboxylase (ATP-hydrolysing)) ligase)	TM
27744	2.0318041265	AA452818	ESTs Weakly similar to HYPOTHETICAL PROTEIN H10034 [Haemophilus influenzae]	other
3997	2.0311208335	U19906	Arginine vasopressin receptor 1 (AVPR1)	?
22717	2.0302732387	R91394	EST - RC_R91394	?
377	2.0289078264	D28364	EST - D28364	other
28581	2.0274006652	C21163	EST	other
11790	2.0269672127	AA256678	ESTs Highly similar to POP2 PROTEIN [Saccharomyces cerevisiae]	other
37931	2.0269058272	AA478523	ESTs Weakly similar to !!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]	other
24678	2.0209818539	Z39349	ESTs Weakly similar to VACUOLAR ATP SYNTHASE 54 KD SUBUNIT [Saccharomyces cerevisiae]	other
10840	2.0209035614	AA122217	ESTs Weakly similar to HYPOTHETICAL 61.3 KD PROTEIN F25B5.5 IN CHROMOSOME III [C.elegans]	other
13964	2.0207518872	AA479048	ESTs	?
15685	2.019773566	W67631	Homo sapiens clone 24538 mRNA sequence	TM
28379	2.0189373185	AA609710	ESTs	other
13349	2.0172119305	AA449269	ESTs Weakly similar to MITOCHONDRIAL PRECURSOR PROTEINS IMPORT RECEPTOR [Neurospora crassa]	SS.
7322	2.0167797945	AA090692	ESTs Weakly similar to The KIAA0138 gene product is novel. [H.sapiens]	other
29358	2.0165296752	H70641	EST - RC_H70641	?

FIGURE 8 (cont.)

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24230	2.016017562	W72276	ESTs	other
40212	2.0158778189	H88535	Human clone 121711 defective mariner transposon Hsma2 mRNA sequence	?
729	2.01573779	D83778	Human mRNA for KIAA0194 gene partial cds	other
17951	2.0144787235	AA165526	Homo sapiens bifunctional ATP sulfurylase/adenosine 5'-phosphosulfate kinase mRNA complete cds	other
33943	2.0135799277	AA171739	ESTs	other
5870	2.0118426199	X59244	Zinc finger protein 43 (HTF6)	other
36319	2.0116529739	AA425107	ESTs	other
25654	2.0097423819	AA126951	ESTs Weakly similar to DNA-directed RNA polymerase [D. melanogaster]	other
16344	2.0090457727	AA018907	ESTs	?
8118	2.0080099575	AA328993	ESTs	other
29962	2.0087628098	N25228	ESTs	TM
32236	2.0078250756	R49327	Natural resistance-associated macrophage protein 2	TM
3279	2.0072427596	M94065	DIHYDROOROTATE DEHYDROGENASE PRECURSOR	TM
16255	2.0065069683	AA013349	ESTs	other
37972	2.0059209236	AA478215	EST - RC_AA479215	TM
41256	2.005858844	R31577	ESTs	other
34834	2.0050133743	AA292655	ESTs	other
23169	2.0039279023	T33215	ESTs	other
29851	2.0034762995	N22145	ESTs	other
32862	2	W32519	EST	?

FIGURE 8 (cont.)

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New Key Number	Accession	fold upregulated of Tumor over normal colon	Unigene Descriptor	
104660	AA007160	23	ESTs	SS
130016	AA055811	14	transmembrane glycoprotein	SS, TM
104954	AA074514	10	ESTs; Moderately similar to (define not available 4753768) [H.sapiens]	Other
105082	AA143763	7	ESTs; Weakly similar to Similarity to S. Pombe BEM1/BUD5 suppressor [C.elegans]	Other
109141	AA176428	7	ESTs	Other
108893	AA135894	6	retinoic acid induced 3	TM
108927	AA143493	5	ESTs; Weakly similar to PLECKSTRIN [H.sapiens]	Other
109027	AA157818	5	Human endogenous retroviral protease mRNA; complete cds	Other
133015	AA047036	4	ESTs	Other
114546	AA056263	4	ESTs; Moderately similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]	Other
104974	AA085918	4	H.sapiens HUNK1 mRNA	Other
108695	AA121315	4	ESTs	SS
105049	AA132554	4	ESTs; Moderately similar to myosin heavy chain 12 [H.sapiens]	Other
133834	AA147510	4	Homo sapiens serine protease mRNA; complete cds	Other
109244	AA194237	4	ESTs; Weakly similar to C17H11.6 [C.elegans]	Other
128411	AA007555	3	ESTs; Weakly similar to transformation-related protein [H.sapiens]	SS, TM
114509	AA043551	3	ESTs	Other
104888	AA053660	3	ESTs	Other
114542	AA055768	3	ESTs	SS
132718	AA056731	3	Sjogren syndrome antigen A2 (60kD; ribonucleoprotein autoantigen SS-A/Ro)	Other
104953	AA074157	3	ESTs	Other
132784	AA099589	3	GDP dissociation inhibitor 2	Other
130962	AA102051	3	transmembrane 4 superfamily member 6	SS, TM
134421	AA122386	3	collagen; type V; alpha 2	SS
105035	AA128486	3	ESTs	Other
105039	AA130349	3	ESTs	Other
105062	AA134968	3	ESTs	Other
133617	AA148318	3	Human mRNA for KIAA0069 gene; partial cds	TM

FIGURE 9

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		ESTs; Highly similar to CAMP-DEPENDENT PROTEIN KINASE TYPE II-ALPHA REGULATORY CHAIN	
130335	AA156499	3: [H.sapiens]	Other
105132	AA159501	3: HBV associated factor	Other
109042	AA159525	3: ESTs	Other
109043	AA159605	3: ESTs	Other
132669	AA188378	ESTs; Weakly similar to 60S RIBOSOMAL 3: PROTEIN L22 [H.sapiens]	Other
135398	AA194075	3: nuclear receptor coactivator 4	Other
109344	AA213696	3: ESTs	SS
133221	AA235289	ESTs; Highly similar to rap2 gene product 3: [H.sapiens]	Other
114496	AA035611	ESTs; Weakly similar to !!!! ALU SUBFAMILY SX WARNING ENTRY !!!! 2: [H.sapiens]	Other
128635	AA043959	2: tropomyosin 4	Other
129912	AA047344	ESTs; Weakly similar to similar to WW/rsp5/WWP domain containing proteins 2: [C.elegans]	Other
104927	AA058855	2: ESTs	SS
132821	AA070724	CD44 antigen (homing function and Indian 2: blood group system)	Other
108409	AA075578	"zm88h3.s1 Stratagene ovarian cancer (#937219) Homo sapiens cDNA clone IMAGE:54545 3', mRNA sequence"	Other
133621	AA076138	2: H2A histone family; member Y	Other
108565	AA085342	2: ATPase; Ca++ transporting; cardiac muscle; slow twitch 2	TM
104977	AA088228	2: ESTs	Other
103777	AA093131	Homo sapiens PAC clone DJ0167F23 from 2: 7p15	Other
108649	AA112540	2: ESTs	Other
114692	AA121995	ESTs; Weakly similar to Similar to 2: potassium channel protein. [C.elegans]	Other
105063	AA134985	2: ESTs	Other
133273	AA147725	2: dendritic cell protein	Other
128515	AA149044	ESTs; Highly similar to the KIAA0195 gene 2: is expressed ubiquitously. [H.sapiens]	SS
105182	AA191014	ESTs; Weakly similar to Ydr372cp 2: [S.cerevisiae]	Other
109277	AA196332	2: ESTs	Other
132608	AA199588	ARP3 (actin-related protein 3; yeast) 2: homolog	Other
109380	AA219015	2: ESTs	Other
130800	AA223386	ESTs; Weakly similar to katanin p80 2: subunit [H.sapiens]	Other
129945	AA232104	ESTs; Highly similar to (define not 2: available 4929579) [H.sapiens]	Other
105305	AA233609	2: spindle pole body protein	Other

FIGURE 9

(Cont.)

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128924	AA234962	2. ESTs	TM
114895	AA236177	Homo sapiens mRNA for KIAA0887 protein; 2 partial cds	Other

## FIGURE 9 (Cont.)

FIGURE 10  
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	A	B	C	D	E
1	NewKey/Num	fold upregulated	Accession	Description	Protein
2	2451	526	M21305	Human alpha satellite and satellite 3 junction DNA sequence	?
3	27090	7.4	AA411502	ESTs; Weakly similar to serine protease [H.sapiens]	?
4	232	7	D13666	Homo sapiens mRNA for osteoblast specific factor 2 (OSF-2os)	SS
5	25461	6.8	AA102520	ESTs; Weakly similar to heat shock protein hsp4 homolog [H.sapiens]	TM
6	27665	6.2	AA453783	ESTs	other
7	33492	6.2	F13673	ESTs	other
8	28050	5.6	AA489057	H.sapiens mRNA for nuclear protein SA-2	?
9	31485	5.6	N71781	ESTs	other
10	26606	5.4	AA132514	density-regulated protein	other
11	7000	5	Z74616	collagen, type I, alpha 2	SS
12	25931	4.7	AA236200	ESTs	other
13	12118	4.5	AA291528	ESTs	other
14	32913	4.4	W46810	HMT1 (hnRNP methyltransferase; S. cerevisiae)-like 2	other
15	26864	4.3	AA333604	H beta 58 homolog	other
16	22514	4.2	R79392	ESTs	other
17	25466	4.2	AA112012	lactate dehydrogenase A	TM
18	32276	4.1	R92994	matrix metalloproteinase 12 (macrophage elastase)	SS
19	32465	4.1	T32108	ESTs	other
20	22430	4	R71082	TFAR19 novel apoptosis-related gene	other
21	30052	4	N32566	ESTs; Weakly similar to Ynf333op [S.cerevisiae]	?
22	28354	3.9	C14037	ESTs; Weakly similar to Ynf7e-ap [S.cerevisiae]	?
23	26604	3.9	H98655	Homo sapiens gene for NBS1; complete cds	TM
24	27592	3.8	AA449417	Homo sapiens mRNA for putative glucosyltransferase; partial cds	TM
25	26691	3.8	D51276	STATMIN	other
26	19100	3.7	H10933	ESTs	other
27	5891	3.5	X60486	H4 histone family, member G	?
28	12288	3.5	AA398243	ESTs; Highly similar to RSPS PROTEIN [Saccharomyces cerevisiae]	other
29	23629	3.5	T88700	ESTs	other
30	25951	3.5	AA236672	ESTs; Weakly similar to DFS7 [H.sapiens]	other
31	477	3.4	D38583	Human mRNA for calgizzarin; complete cds	?
32	11193	3.4	AA186897	ESTs	TM
33	27193	3.4	AA421562	Homo sapiens secreted cement gland protein XAG-2 homolog (hAG-2/R)	SS
34	32899	3.4	W45728	ESTs; Highly similar to HETEROGENEOUS NUCLEAR RIBONUCLEOPR	other
35	9576	3.3	J03464	collagen, type I, alpha 2	SS
36	10506	3.3	AA027086	ESTs; Highly similar to HYPOTHETICAL 1.4 KD PROTEIN IN UBP5-SPT	other
37	22064	3.3	R51309	ESTs	other
38	39217	3.3	C21242	calponin 2	other
39	2613	3.2	M29540	CARGINOEMBRYONIC ANTIGEN PRECURSOR	TM
40	27583	3.2	AA449068	ESTs	TM
41	40031	3.2	H83442	catechol-O-methyltransferase	other
42	10131	3.1	R56183	eukaryotic translation initiation factor 3; subunit 6 (49kD)	other
43	25154	3.1	AA043353	ESTs; Highly similar to UBIQUITIN-CONJUGATING ENZYME E2-17 KD 1	other
44	25821	3.1	AA164643	ESTs; Weakly similar to Ki-167 intracellular antigen [H.sapiens]	other

FIGURE 10 (CONT)  
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	A	B	C	D	E
45	26004	3.1	AA243297	ESTs; Weakly similar to PEANUT PROTEIN [Drosophila melanogaster]	other
46	27055	3.1	AA08542	ESTs	other
47	10844	3	AA100719	non-specific cross reacting antigen	other
48	11358	3	AA232104	ESTs	other
49	17389	3	AA121315	ESTs	other
50	17415	3	AA122366	Collagen, type V, alpha 2'	?
51	23772	3	T92735	ESTs	TM
52	25331	3	AA070947	tropomyosin 4	other
53	25358	3	AA075138	histone macroH2A1.2	other
54	27039	3	AA08145	ESTs	SS, TM
55	27261	3	AA25544	Homo sapiens clone 23689 mRNA; complete cds	other
56	28795	3	D80346	SFRS protein kinase 1	other
57	32192	3	R67275	collagen; type XI; alpha 1	other
58	3033	2.9	M77349	transforming growth factor; beta-induced; 68KD	SS
59	5519	2.9	X06700	collagen; type III; alpha 1 [Ehlers-Danlos syndrome type IV; autosomal do	other
60	5562	2.9	X12676	keratin 18	other
61	11818	2.9	AA251902	Homo sapiens lysophospholipase (LPL1) mRNA; complete cds	other
62	17686	2.9	AA147725	Homo sapiens GA17 protein mRNA; complete cds	other
63	18024	2.9	AA183378	ESTs; Highly similar to 6S RIBOSOMAL PROTEIN L22 [Rattus norvegicu	other
64	20941	2.9	N80933	ESTs	other
65	13612	2.8	AA458899	ESTs; Highly similar to (define not available 412715) [H.sapiens]	TM
66	17799	2.8	AA157818	Human endogenous retroviral protease mRNA; complete cds	other
67	25344	2.8	AA075182	Sjogren syndrome antigen A2 (6KD; ribonucleoprotein autoantigen SS-A/R	?
68	25563	2.8	AA131162	ESTs	other
69	32170	2.8	R61297	eukaryotic translation initiation factor 3; subunit 6 (48KD)	other
70	33586	2.8	Z38656	coatomer protein complex; subunit alpha	SS
71	2396	2.7	M18728	non-specific cross reacting antigen	other
72	3251	2.7	M93036	membrane component; chromosomal 4; surface marker (35kD glycoprotein	other
73	8158	2.7	AA372630	Homo sapiens GW112 protein (GW112) mRNA; complete cds	other
74	9207	2.7	D79052	ESTs; Highly similar to PROTEIN TRANSPORT PROTEIN SEC61 GAMM	other
75	15051	2.7	U64661	Human poly(A)-binding protein processed pseudogene3	?
76	15614	2.7	W63627	ESTs; Moderately similar to IIII ALU SUBFAMILY SP WARNING ENTRY II	TM
77	25323	2.7	AA070465	Homo sapiens clone 23667 unknown mRNA; partial cds	TM
78	25329	2.7	AA070827	ESTs; Weakly similar to KIAA18 [H.sapiens]	TM
79	25549	2.7	AA127053	ESTs; Weakly similar to predicted using GeneFinder [C.elegans]	TM
80	25584	2.7	AA131165	heterogeneous nuclear ribonucleoprotein A2/B1	other
81	27468	2.7	AA41971	Homo sapiens mRNA for KIAA454 protein; complete cds	TM
82	32012	2.7	R31180	ESTs	?
83	38087	2.7	AA486931	Homo sapiens chaperonin containing I-complex polypeptide 1; beta subunit	other
84	38457	2.7	AA588714	Lon protease-like protein	other
85	39421	2.7	F03974	H.sapiens mRNA for Sop2p-like protein	other
86	3758	2.6	U05587	glycyl-tRNA synthetase	other
87	8952	2.6	C00038	ESTs	TM
88	12978	2.6	AA431191	ESTs	other

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FIGURE 10 (CONT)  
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	A	B	C	D	E
89	17627	2.6	AA135894	"Homo sapiens putative G protein-coupled receptor (RAIG1) Retinoic acid i	TM
90	20752	2.6	N68921	ESTs; Weakly similar to neogenin [H.sapiens]	other
91	22854	2.6	T17185	ESTs	TM
92	25808	2.6	AA161161	ESTs	other
93	27169	2.6	AA418879	proteasome (prosome; macropain) 26S subunit; non-A1Pase; 11	other
94	28096	2.6	AA430362	ESTs; Moderately similar to ubiquitous TPR motif Y isoform [H.sapiens]	other
95	28705	2.6	AA42889	ESTs	other
96	33593	2.6	Z39041	ESTs; Weakly similar to DNA-DIRECTED RNA POLYMERASE III LARGE	TM
97	37363	2.6	AA455521	E2F transcription factor 5; p13-binding	other
98	39170	2.6	C15324	ESTs	SS, TM
99	39251	2.6	D20002	"HUMGS872 Human promyelocyte Homo sapiens cDNA clone pm2344 3'	other
100	2787	2.5	M37583	H2A histone family; member Z	other
101	5468	2.5	X04347	heterogeneous nuclear ribonucleoprotein A1	other
102	9243	2.5	D82348	Homo sapiens mRNA for 5-aminimidazole-4-carboxamide-1-beta-D-ribo	other
103	14791	2.5	T35725	ESTs; Highly similar to HYPOTHETICAL 44.2 KD PROTEIN IN SCO2-MR	other
104	14804	2.5	T48195	eukaryotic translation initiation factor 3; subunit 3 (gamma, 4kD)	other
105	16974	2.5	AA070724	CD44 antigen (homolog function and Indian blood group system)	other
106	20031	2.5	N21085	Homo sapiens androgen receptor associated protein 24 (ARA24) mRNA; c	?
107	25484	2.5	AA112679	ESTs; Weakly similar to alternatively spliced product using exon 13A [H.sa	TM
108	26830	2.5	AA347359	lysosome (renal amyloidosis)	SS
109	28068	2.5	AA490212	histone macroH2A1.2	other
110	30071	2.5	N33011	replication protein A3 (14kD)	other
111	32740	2.5	W31600	von Hippel-Lindau syndrome	other
112	35870	2.5	AA416785	heterogeneous nuclear ribonucleoprotein A1	other
113	41908	2.5	T59161	Thymosin; beta 1	TM
114	6011	2.4	X66401	proteasome (prosome; macropain) subunit; beta type; 9 (large multifunction	?
115	9201	2.4	D63079	ESTs; Weakly similar to NADH-LUBQUINONE OXIDOREDUCTASE CHAI	other
116	9218	2.4	D79891	ESTs	TM
117	10085	2.4	R32993	ESTs; Highly similar to LEUCYL-TRNA SYNTHETASE; CYTOPLASMIC [	other
118	10253	2.4	R82411	DEK gene	other
119	11107	2.4	AA159501	ESTs; Moderately similar to RBCK2 [R. norvegicus]	other
120	11846	2.4	AA262989	ESTs; Weakly similar to similar to Yeast hypothetical protein L8187.12 like	other
121	12767	2.4	AA424346	ESTs; Weakly similar to uroporphyrinogen III synthase; UROGIII [H.sapien	SS
122	13772	2.4	AA464708	ESTs; Weakly similar to alternatively spliced product using exon 13A [H.sa	other
123	16728	2.4	AA053102	cadherin 17; LI cadherin (liver-intestine)	SS, TM
124	17774	2.4	AA158243	ESTs; Highly similar to (define not available 412715) [H.sapiens]	other
125	21366	2.4	R24059	ESTs	other
126	25433	2.4	AA095589	GDP dissociation inhibitor 2	TM
127	25603	2.4	AA132032	Homo sapiens CAGH1a (CAGH1) mRNA; partial cds	other
128	25791	2.4	AA159980	ELK1 motif kinase	other
129	26163	2.4	AA252827	ESTs	?
130	26852	2.4	AA365527	ESTs; Weakly similar to TLS-associated protein TASP [H.sapiens]	other
131	27122	2.4	AA416877	ESTs	other
132	28365	2.4	C14090	actin; gamma 1	other

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FIGURE 10 (CONT)

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	A	B	C	D	E
133	28926	2.4	D25560	Homo sapiens DNA from chromosome 19-cosmid R3879 containing USF2;	other
134	28587	2.4	D51241	Homo sapiens mRNA for putative vacuolar proton ATPase membrane sect	SS, TM
135	28950	2.4	N24968	vacuolar H(+)-ATPase subunit	other
136	32892	2.4	W45457	ESTs; Moderately similar to neuronal thread protein AD7c-NTP [H.sapiens]	other
137	33811	2.4	AA173143	heterogeneous nuclear ribonucleoprotein G	other
138	40121	2.4	H93492	ESTs; Highly similar to villin [H.sapiens]	other
139	40141	2.4	H94877	ESTs; Moderately similar to putative G-binding protein [H.sapiens]	other
140	40167	2.4	H96237	collagen type XI; alpha 1	other
141	446	2.3	D38073	minichromosome maintenance deficient (S. cerevisiae) 3	other
142	3530	2.3	S81914	DIFFERENTIATION-DEPENDENT GENE 2	other
143	7835	2.3	AA252436	Homo sapiens tyrosophosphatase (LPL1) mRNA; complete cds	other
144	10898	2.3	AA121879	proteasome (prosome; macropain) subunit; beta type; 9 (large multi-function	other
145	10965	2.3	AA134136	ESTs; Highly similar to CYTOSOL AMINOPEPTIDASE [Bos taurus]	other
146	11015	2.3	AA143763	ESTs; Weakly similar to Similarity to S. Pombe BEM1/5UD5 suppressor [C	other
147	11895	2.3	AA279420	ESTs; Highly similar to (define not available 433735) [H.sapiens]	TM
148	13366	2.3	AA451676	ESTs	other
149	15464	2.3	W28391	proliferation-associated 2G4; 38kD	other
150	17619	2.3	AA135406	ESTs	other
151	18225	2.3	AA213696	ESTs	other
152	20450	2.3	N53927	ESTs; Weakly similar to phenylalanine binding protein [H.sapiens]	?
153	25308	2.3	AA065227	ESTs; Weakly similar to coded for by C. elegans cDNA yk1c1.3 [C.elegans	other
154	26590	2.3	AA282151	ESTs; Weakly similar to predicted using Genefinder [C.elegans]	other
155	27624	2.3	AA452112	Homo sapiens mRNA for putative thioredoxin-like protein	other
156	27792	2.3	AA460359	ESTs; Weakly similar to DNA-DIRECTED RNA POLYMERASE II 14 KD P	?
157	28231	2.3	AA600153	DEK gene	other
158	28722	2.3	D59711	ESTs	other
159	30363	2.3	N47956	eukaryotic translation initiation factor 3; subunit 3 (gamma, 4kD)	other
160	32928	2.3	W47620	ESTs; Weakly similar to reverse transcriptase related protein [H.sapiens]	other
161	39505	2.3	H11320	Homo sapiens HRHF82115 mRNA; partial cds	TM
162	40176	2.3	H96665	peptidylprolyl isomerase B (cyclophilin B)	other
163	40366	2.3	N26681	ESTs; Highly similar to (define not available 467914) [H.sapiens]	other
164	40733	2.3	N67422	ESTs; Weakly similar to 25 kDa trypsin inhibitor [H.sapiens]	other
165	4918	2.2	U68105	poly(A)-binding protein-like 1	?
166	5165	2.2	U81607	GRAVIN	other
167	12242	2.2	AA372018	ESTs	other
168	13154	2.2	AA442788	Homo sapiens inner mitochondrial membrane translocase Tim23 (TIM23)	?
169	14276	2.2	AA598450	ESTs	other
170	15721	2.2	W95348	ESTs	TM
171	20588	2.2	N62945	Homo sapiens hMm1TRA1b mRNA; complete cds	TM
172	24021	2.2	W42957	ESTs	other
173	24250	2.2	W84712	cellulysin	other
174	25245	2.2	AA055768	ESTs	SS
175	25430	2.2	AA099429	SPLICING FACTOR U2AF 35 KD SUBUNIT	TM
176	25562	2.2	AA128904	heterogeneous nuclear ribonucleoprotein U (scaffold attachment factor A)	other

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FIGURE 10 (CONT)

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	A	B	C	D	E
177	28745	2.2	D60485	caldesmon 1	other
178	31997	2.2	R20659	tumor rejection antigen (gp96) 1	other
179	32491	2.2	T47333	Human TFIID subunit TAF155 (TAF155) mRNA; complete cds	other
180	32636	2.2	T93807	high-mobility group (nonhistone chromosomal) protein 1	other
181	37703	2.2	AA476237	ESTs; Weakly similar to uroporphyrinogen III synthase; UROIII [H.sapien]	TM
182	215	2.1	D13627	Human mRNA for KIAA2 gene; complete cds	TM
183	2449	2.1	M21259	small nuclear ribonucleoprotein polypeptide E	?
184	3205	2.1	M88458	ER LUMEN PROTEIN RETAINING RECEPTOR 2	TM
185	4197	2.1	U31556	E2F transcription factor 6; p13-binding	other
186	4811	2.1	U62962	eukaryotic translation initiation factor 3; subunit 8 (48kD)	other
187	5417	2.1	X01060	transferrin receptor (p9; CD71)	TM
188	6334	2.1	X83228	cadherin 17; LI cadherin (liver-intestine)	SS, TM
189	6605	2.1	X95133	NEUTROPHIL GELATININASE-ASSOCIATED LIPOCALIN PRECURSOR	?
190	10471	2.1	AA024482	ESTs; Highly similar to KERATIN; TYPE I CYTOSKELETAL 14 [Homo sa]	other
191	11027	2.1	AA148318	Human mRNA for KIAA69 gene; partial cds	TM
192	11116	2.1	AA161292	INTERFERON-ALPHA INDUCED 11.5 KD PROTEIN	other
193	11540	2.1	AA236972	ESTs; Moderately similar to III ALU SUBFAMILY J WARNING ENTRY III	other
194	1937	2.1	AA280865	ESTs; Weakly similar to Similarity to Yeast hypothetical protein YOR3160	other
195	17312	2.1	AA111889	pigment epithelium-derived factor	other
196	19286	2.1	H18947	ESTs	other
197	20122	2.1	N28259	ESTs; Weakly similar to uroporphyrinogen III synthase; UROIII [H.sapien]	other
198	20946	2.1	N91492	Homo sapiens clone 628 unknown mRNA; complete sequence	other
199	20997	2.1	N98464	ESTs	other
200	27106	2.1	AA412452	ESTs	other
201	28036	2.1	AA488433	ESTs; Weakly similar to deduced amino acid sequence is highly homologous	other
202	28167	2.1	AA521256	ESTs; Highly similar to nuclear pore complex protein NUP17 [R.norvegicus]	other
203	28336	2.1	AA621604	ESTs	other
204	28719	2.1	D59570	ESTs	other
205	28886	2.1	F04674	Homo sapiens mRNA for KIAA746 protein; partial cds	other
206	32124	2.1	R48603	eukaryotic translation initiation factor 3; subunit 7 (zeta; 66/67kD)	other
207	32433	2.1	W90444	ESTs; Highly similar to (define not available 4454524) [H.sapiens]	other
208	33564	2.1	W96151	ESTs; Moderately similar to ganglioside-induced differentiation associated	?
209	35778	2.1	AA412270	ESTs	other
210	36568	2.1	AA608751	cathepsin B	other
211	39301	2.1	D57317	Human transcriptional coactivator PCA mRNA; complete cds	SS
212	39945	2.1	H73484	ESTs; Weakly similar to similar to Yeast hypothetical protein L8167.12 like	SS, TM
213	39977	2.1	H73323	Homo sapiens E2F-related transcription factor (DF-1) mRNA; complete cds	other
214	40376	2.1	N27198	ESTs	other
215	41795	2.1	T28799	ESTs; Highly similar to TYROSINE-PROTEIN KINASE RECEPTOR EPH-	TM
216	1714	2	L09604	proteolipid protein 2 (colonic epithelium-enriched)	TM
217	2001	2	L33930	"Homo sapiens CD24 signal transducer mRNA, complete cds and 3' region	TM
218	3278	2	M94556	single-stranded DNA-binding protein	other
219	4145	2	U28749	high-mobility group (nonhistone chromosomal) protein isoform I-C	TM
220	8149	2	AA364267	ESTs; Highly similar to HYPOTHETICAL 68.7 KD PROTEIN ZK157.1 IN C	other

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FIGURE 10 (CONT)

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	A	B	C	D	E
221	9844	2	N33807	ESTs; highly similar to NEDD-4 PROTEIN [Homo sapiens]	other
222	14032	2	AA466092	ESTs; Weakly similar to CH-TOG PROTEIN [H. sapiens]	TM
223	16395	2	AA025673	ESTs; Moderately similar to (define not available 416878) [H. sapiens]	TM
224	17327	2	AA112540	ESTs	TM
225	23083	2	T30481	ubiquitin-conjugating enzyme E2E 1 (homologous to yeast UBC4/5)	other
226	25625	2	AA133969	ESTs; Weakly similar to neuronal thread protein AD7c-NTP [H. sapiens]	other
227	26073	2	AA490494	ESTs	other
228	28700	2	D53139	ribosomal protein S28	other
229	29095	2	H27188	collagen-binding protein 2 (collagen 2)	other
230	32191	2	R67083	cathepsin	SS, TM
231	32897	2	W46664	5' nucleotidase (CD73)	other
232	10782	1.6	AA074880	ESTs; Weakly similar to HYPOTHETICAL 85. KD PROTEIN IN CRA2-ATP	other
233	27795	1.6	AA460454	ESTs; Weakly similar to KIAA512 protein [H. sapiens]	other
234	28706	1.6	D54286	Human mRNA for KIAA255 gene; complete cds	TM
235	36414	1.6	AA430186	ESTs	other
236	9979	1.5	N91087	ESTs; Weakly similar to F55A12.9 (C. elegans)	other
237	9987	1.5	N95507	ESTs; Weakly similar to KIAA319 [H. sapiens]	TM
238	10656	1.5	AA047260	ESTs	other
239	14977	1.5	U37546	apoptosis inhibitor 1	TM
240	27085	1.5	AA410294	Human mRNA for KIAA336 gene; complete cds	other
241	29278	1.5	H72948	biglycan	SS
242	31917	1.5	N89238	ESTs	other
243	38272	1.5	AA465533	ESTs	other
244	41396	1.5	R55342	CD68 antigen	other
245	41966	1.5	T67710	ESTs	?
246	8439	1.4	AA436304	Homo sapiens androgen receptor associated protein 24 (ARA24) mRNA; c	other
247	10311	1.4	AA001936	ESTs	other
248	10859	1.4	AA112149	ESTs	other
249	11279	1.4	AA213410	ESTs	SS
250	13548	1.4	AA456033	ESTs; Highly similar to HYPOTHETICAL 1.4 KD PROTEIN IN UBPS-SPT	other
251	14340	1.4	AA598553	Homo sapiens TCFL3 mRNA for transcription factor-like 5; complete cds	other
252	32180	1.4	R63727	ESTs	other
253	35187	1.4	AA386722	ESTs	other
254	37254	1.4	AA453483	ESTs	TM
255	5397	1.3	HG4757-HT5207	"Oncogene Mit-Akt, Fusion Activated"	other
256	5997	1.3	V01516	KERATIN; TYPE II CYTOSKELETAL 8D	SS, TM
257	16272	1.3	AA018922	core promoter element binding protein	other
258	23427	1.3	T70356	ESTs; Highly similar to POL POLYPROTEIN [Simian sarcoma virus]	other
259	25718	1.3	AA150741	gene with multiple splice variants near HD locus on 4p16.3	other
260	33499	1.3	W63403	ESTs	other
261	36574	1.3	AA434454	ESTs; Weakly similar to ori; hypothetical protein [E. coli]	SS
262	41548	1.3	R82846	ESTs	SS
263	2386	1.2	M17663	insulin-like growth factor 2 (somatomedin A)	other
264	6368	1.2	X86371	lethal giant larvae (Drosophila) homolog 1	TM

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FIGURE 10 (CONT)  
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	A	B	C	D	E
265	24427	1.2	Z38208	ESTs	other
266	27089	1.2	AA411473	adducin 1 (alpha)	other
267	33177	1.2	W73195	ESTs	other
268	34852	1.2	AA347691	ESTs	?
269	35325	1.2	AA400273	ESTs	other
270	36609	1.2	AA435668	ESTs; Weakly similar to putative p15 [H.sapiens]	other
271	38477	1.2	AA598939	ESTs	other
272	40975	1.2	R02547	ESTs	other
273	41874	1.2	T51150	ESTs	other
274	8235	1.1	AA401047	Homo sapiens mRNA for neuropilin; complete cds	other
275	9772	1.1	M81349	SERUM AMYLOID A-4 PROTEIN PRECURSOR	SS
276	14758	1.1	S83198	BLP	other
277	15531	1.1	X90579	H.sapiens DNA for cyp related pseudogene	?
278	20556	1.1	N66289	ESTs	other
279	24891	1.1	AA004502	cerebroside [3'-phosphoadenylylsulfate:galactosylceramide 3'] sulfoltransfer	TM
280	29045	1.1	H13649	ESTs	other
281	31584	1.1	N74690	ESTs	TM
282	31640	1.1	N78784	Homo sapiens BinEL mRNA; complete cds	other
283	35293	1.1	AA400013	EST	other
284	37593	1.1	AA461469	ESTs	other
285	37852	1.1	AA479896	ESTs	other
286	38397	1.1	AA521342	ESTs	other
287	38552	1.1	AA609018	ESTs	other
288	40397	1.1	N29963	ESTs; Moderately similar to III ALU CLASS C WARNING ENTRY III [H.sapiens]	other
289	40488	1.1	N40559	ESTs; Highly similar to LEUKOTOXIN SECRETION ATP-BINDING PROT	other
290	41231	1.1	R41772	EST	other
291	41333	1.1	R48580	ESTs	other
292	5255	1	M83143	"Homo sapiens plasminogen-like protein (PLGL) mRNA, complete cds"	other
293	5742	1	X53065	Accession not listed in Genbank	?
294	6007	1	X66363	SERINE/THREONINE-PROTEIN KINASE PCTAIRE-1	other
295	15233	1	W04950	ESTs	other
296	15262	1	W17304	Homo sapiens mRNA for KIAA97 protein; complete cds	other
297	15363	1	W26847	ESTs; Highly similar to MITOCHONDRIAL RNA SPLICING PROTEIN MS	other
298	15606	1	W58725	mitogen-activated protein kinase-activated protein kinase 2	TM
299	18435	1	AA233898	ESTs	other
300	21736	1	R41899	ESTs	TM
301	25306	1	AA065081	"zmt13a3.s1 Sra1ogene pancreas (#93726) Homo sapiens cDNA clone IMA	other
302	29111	1	H40486	ESTs; Weakly similar to III ALU SUBFAMILY J WARNING ENTRY III [H.sapiens]	other
303	34743	1	AA302772	ESTs; Weakly similar to neuronal thread protein AD7c-NTP [H.sapiens]	other
304	34801	1	AA342526	ESTs; Moderately similar to unknown [H.sapiens]	other
305	35355	1	AA400521	ESTs	other
306	35940	1	AA446449	ESTs	other
307	39221	1	C21930	ESTs	other
308	1322	0.9	HG4535-HT4940	Dematin	other

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FIGURE 10 (CONT)  
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	A	B	C	D	E
309	9982	0.9	N94146	ESTs	other
310	10084	0.9	R32932	ESTs	other
311	11701	0.9	AA255548	ESTs	other
312	12088	0.9	AA287566	Human mRNA for KIAA187 gene; complete cds	other
313	15287	0.9	W19098	ESTs	other
314	15901	0.9	Z20905	immunoglobulin superfamily; member 3	SS
315	21906	0.9	R45612	ESTs	other
316	22002	0.9	R49459	ESTs	other
317	23138	0.9	T40827	ESTs	other
318	26673	0.9	D45719	ESTs	other
319	28159	0.9	H60824	ESTs	other
320	32610	0.9	T89122	Human clone 23732 mRNA; partial cds	SS, TM
321	32674	0.9	W02129	EST	other
322	35426	0.9	AA401409	ESTs	other
323	38504	0.9	AA59209	ESTs; Moderately similar to neuronal thread protein AD7c-NTP [H.sapiens]	other
324	244	0.8	D14446	fibrinogen-like 1	TM
325	14204	0.8	AA498980	ESTs	other
326	25250	0.8	AA056210	ESTs	other
327	9871	0.7	N87590	ESTs	other
328	20461	0.7	N54429	ESTs	other
329	41029	0.7	R08615	homogentisate 1,2-dioxygenase (homogentisate oxidase)	other
330	41985	0.6	T71012	fibrinogen; B beta polypeptide	SS, TM

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**FIGURE 11**  
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PRIMEKEY	Fold Upregulated in Tumors	Exemplar Accession	Complete Title	ORF Structural Info
134804	12.3	L37036	small inducible cytokine subfamily B (Cys-X-Cys); member 5 (epithelial-derived neutrophil-activating peptide 78)	TM
130617	11.4	M90516	glutamine-fructose-6-phosphate transaminase 1	TM
104209	10.6	AB000221	small inducible cytokine subfamily A (Cys-Cys); member 18; pulmonary and activation-regulated	SS
109991	10	H09813	ESTs	TM
124315	8.3	H94892	v-rat simian leukemia viral oncogene homolog A (ras related)	Other
132977	8.2	U28686	RNA binding motif protein 3	Other
130407	7.4	N29888	ESTs	Other
116176	6.6	AA463725	ESTs; Weakly similar to KIAA0226 [H.sapiens]	Other
119271	6.5	T16387	ESTs	Other
134711	6.5	X04011	cytochrome b-245; beta polypeptide (chronic granulomatous disease)	TM
134326	6.1	U16306	"Human chondroitin sulfate proteoglycan versican V splice-variant precursor peptide mRNA, complete cds"	Other
125852	5.9	H09290	ESTs; Weakly similar to unknown [H.sapiens]	SS, TM
112169	5.9	R48589	ESTs	TM
132528	5.9	AA283006	chromosome-associated polypeptide C	Other
134367	5.7	X54199	phosphoribosylglycinamide formyltransferase; phosphoribosylglycinamide synthetase; phosphoribosylaminoimidazole synthetase	Other
111929	5.2	R40057	prominin (mouse)-like 1	SS, TM
102165	5	U18321	Death associated protein 3	Other
130441	5	U35835	protein kinase; DNA-activated; catalytic polypeptide	Other
133282	5	U52960	SRB7 (suppressor of RNA polymerase B; yeast) homolog	Other
100783	4.9	HG3748-HT4 018	"Basic Transcription Factor, 44 Kda Subunit"	Other
122223	4.9	AA436158	ESTs	Other
104660	4.8	AA007160	ESTs	SS
113702	4.8	T97307	ESTs; Moderately similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]	Other
101185	4.7	L19872	aryl hydrocarbon receptor	Other
105308	4.7	AA233744	ESTs	Other
107168	4.7	AA621540	ESTs	Other
101201	4.6	L22524	matrix metalloproteinase 7 (matrilysin; uterine)	SS
101809	4.5	M86849	"Homo sapiens connexin 26 (GJB2) mRNA, complete cds"	TM
101478	4.5	M23379	RAS p21 protein activator (GTPase activating protein) 1	Other
104695	4.5	AA012953	ESTs	Other
100365	4.4	D78611	mesoderm specific transcript (mouse) homolog	TM
126819	4.3	AA305536	"EST176522 Colon carcinoma (Caco-2) cell line II Homo sapiens cDNA 5' end, mRNA sequence."	Other
101880	4.3	M97925	defensin; alpha 5; Paneth cell-specific	SS
126838	4.2	AA858097	pigment epithelium-derived factor	Other
101684	4.2	M63256	cerebellar degeneration-related protein (62kD)	Other
117634	4.2	N36421	ESTs; Moderately similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]	Other
132109	4.1	AA599801	ESTs	Other
115054	4.1	AA252863	ESTs	Other
106553	4	AA454967	ESTs	Other
119717	3.9	W69134	ESTs	Other

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FIGURE 11 (CONT)  
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PRIMEKEY	Fold Upregulated in Tumors	Exemplar Accession	Complete Title	ORF Structural Info
131945	3.9	M87339	replication factor C (activator 1) 4 (37kD)	Other
128790	3.9	AA291725	secreted frizzled-related protein 4	SS
120562	3.8	AA280036	ESTs; Weakly similar to W01A6.c [C.elegans]	SS
109517	3.7	D60799	ESTs	Other
102618	3.7	U65932	extracellular matrix protein 1	SS
106286	3.7	AA434441	frizzled (Drosophila) homolog 7	Other
133640	3.6	D83004	ubiquitin-conjugating enzyme E2N (homologous to yeast UBC13)	Other
100335	3.6	D63391	platelet-activating factor acetylhydrolase; isoform lb; gamma subunit (29kD)	Other
104720	3.6	AA018441	ESTs	Other
107348	3.6	U43701	ribosomal protein L23a	Other
134989	3.6	AA236324	ESTs; Weakly similar to !!!! ALU CLASS A WARNING ENTRY !!!! [H.sapiens]	SS
111345	3.6	N89820	ESTs	Other
107053	3.6	AA600147	ESTs; Weakly similar to Similar to NADH-cytochrome B5 reductase [C.elegans]	Other
107240	3.5	D59368	ESTs	Other
107129	3.5	AA620553	flap structure-specific endonuclease 1	Other
134846	3.5	AA431505	Homo sapiens mRNA for putative Sqv-7-like protein; partial	TM
101897	3.5	S58544	sperm associated antigen 1	Other
107151	3.5	AA621169	ESTs	Other
106012	3.4	AA411621	ESTs	Other
101950	3.4	S79219	propionyl Coenzyme A carboxylase; alpha polypeptide	Other
116844	3.4	H64938	ESTs	Other
128025	3.4	AA937173	ESTs	TM
106785	3.4	AA478587	leukemia associated gene 1; candidate tumor suppressor frequently deleted in B-cell chronic lymphocytic leukemia (B-CLL)	Other
104518	3.4	R09815	proteasome (prosome; macropain) 26S subunit; ATPase; 5	Other
117667	3.4	N39214	ser-Thr protein kinase related to the myotonic dystrophy protein kinase	Other
104954	3.3	AA074514	ESTs; Moderately similar to (define not available 4753768) [H.sapiens]	Other
105372	3.3	AA236481	ESTs	Other
104896	3.3	AA054228	ESTs	Other
113485	3.3	T87863	ESTs	Other
127003	3.3	AA550806	ESTs; Weakly similar to (define not available 3882151) [H.sapiens]	TM
100305	3.3	D50487	DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide 8 (RNA helicase)	SS
134722	3.2	W47183	ESTs; Weakly similar to !!!! ALU SUBFAMILY SB2 WARNING ENTRY !!!! [H.sapiens]	Other
126801	3.2	AA512902	ESTs	SS, TM
133503	3.2	M33195	Fc fragment of IgE; high affinity I; receptor for; gamma polypeptide	SS, TM
132183	3.2	L19183	Human MAC30 mRNA; 3' end	TM
105298	3.2	AA233459	ESTs	TM
111046	3.2	N55514	ESTs; Moderately similar to !!!! ALU SUBFAMILY SP WARNING ENTRY !!!! [H.sapiens]	TM
135309	3.2	D25984	ESTs	SS
102808	3.2	U90426	nuclear RNA helicase; DECD variant of DEAD box family	Other
100552	3.1	HG2167-HT2 237	"Protein Kinase HI31, Camp-Dependent"	Other
127652	3.1	AA804487	ESTs	Other

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## FIGURE 11 (CONT)

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PRIMEKEY	Fold Upregulated in Tumors	Exemplar Accession	Complete Title	ORF Structural Info
116127	3.1	AA459703	ESTs; Moderately similar to coded for by C. elegans cDNA CEESD64F [C.elegans]	TM
131904	3.1	AA143019	ESTs; Highly similar to surface 4 integral membrane protein [H.sapiens]	TM
126547	3.1	U47732	transmembrane 4 superfamily member 3	Other
102823	3.1	U90914	carboxypeptidase D	SS
132298	3.1	N41849	Homo sapiens cytokine receptor related protein 4 (CYTOR4) mRNA; complete cds	Other
127445	3.1	AA906286	ESTs	Other
134395	3.1	L09717	lysosomal-associated membrane protein 2	SS, TM
105743	3.1	AA293300	ESTs; Weakly similar to semaphorin C [M.musculus]	Other
125827	3.1	AI471525	YY1 transcription factor	Other
101229	3.1	L27943	cytidine deaminase	Other
102306	3	U33317	defensin; alpha 6; Paneth cell-specific	SS
107318	3	T74445	"yc82f8.r1 Soares infant brain 1NIB Homo sapiens cDNA clone IMAGE:2242 5', mRNA sequence"	Other
120983	3	AA398209	EST	Other
134700	3	AA481414	golgi SNAP receptor complex member 1	TM
131216	3	D31058	ESTs	SS
127565	3	D79516	"HUM272B04B Human aorta polyA+ (TFujiwara) Homo sapiens cDNA clone GEN-272B04 5', mRNA sequence."	Other
106882	2.9	AA489009	ESTs	Other
130874	2.9	T08287	ESTs	Other
101275	2.9	L37936	Ts translation elongation factor; mitochondrial	Other
111179	2.9	N67239	ESTs	Other
126086	2.9	H70975	"yr73g01.r1 Soares fetal liver spleen 1NFLS Homo sapiens cDNA clone IMAGE:210960 5', mRNA sequence."	Other
105365	2.9	AA236275	ESTs	Other
118789	2.9	N75416	ESTs	Other
115117	2.9	AA256492	H.sapiens PAP mRNA	Other
100484	2.9	HG1103-HT1 103	"Guanine Nucleotide-Binding Protein Ral, Ras-Oncogene Related"	Other
101300	2.9	L40391	Homo sapiens (clone s153) mRNA fragment	Other
103075	2.9	X59543	ribonucleotide reductase M1 polypeptide	Other
132164	2.8	U84573	procollagen-lysine; 2-oxoglutarate 5-dioxygenase (lysine hydroxylase) 2	Other
106716	2.8	AA464962	ESTs	Other
134098	2.8	X06323	Human MRL3 mRNA for ribosomal protein L3 homologue (MRL3	Other
134485	2.8	X82153	cathepsin K (pseudosclerosis)	SS
129634	2.8	AA150726	ESTs	Other
112207	2.8	R49602	ESTs	Other
124904	2.8	R86970	ESTs	Other
125471	2.8	AA477571	UDP-glucose ceramide glucosyltransferase	SS
132180	2.8	AA405569	fibroblast activation protein; alpha	SS
104454	2.8	M84443	galactokinase 2	TM
134282	2.8	T25508	ESTs	Other
101558	2.8	M32011	neutrophil cytosolic factor 2 (65kD; chronic granulomatous disease; autosomal 2)	Other
130529	2.8	AA173238	small inducible cytokine A5 (RANTES)	Other
101804	2.7	M86699	TTK protein kinase	Other

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## FIGURE 11 (CONT)

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PRIMEKEY	Fold Upregulated in Tumors	Exemplar Accession	Complete Title	ORF Structural Info
109565	2.7	F01930	ESTs	Other
112427	2.7	R62604	ESTs	Other
115188	2.7	AA261819	ESTs	Other
121831	2.7	AA425374	ESTs	Other
132454	2.7	W78726	ESTs; Highly similar to serine/threonine kinase [H.sapiens]	Other
116399	2.7	AA599729	Homo sapiens homeobox protein A10 (HOXA10) gene; complete cds	Other
100409	2.7	D86957	Human mRNA for KIAA0202 gene; partial cds	Other
130987	2.7	R45698	ESTs	Other
107217	2.7	D51095	ESTs	SS, TM
			Homo sapiens basic transcription factor 2 p44 (btf2p44) gene; partial cds; neuronal apoptosis inhibitory protein (naip) and survival motor neuron protein (smn) genes; complete cds	
125698	2.6	AA748483		SS
118722	2.6	N73563	ESTs	SS
			"y47c1.1 Soares fetal liver spleen 1NFLS Homo sapiens cDNA clone IMAGE:132 5', mRNA sequence"	
104521	2.6	R11604		Other
130800	2.6	AA223386	ESTs; Weakly similar to katanin p80 subunit [H.sapiens]	Other
134415	2.6	AA329274	protein tyrosine phosphatase type IVA; member 2	TM
			ESTs; Moderately similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]	
116461	2.6	AA621557		Other
		HG4297-HT4		
100864	2.6	567	Transcriptional Coactivator Pc4	Other
			"z143h5.r1 Soares_pregnant_uterus_NbHPU Homo sapiens cDNA clone IMAGE:54729 5', mRNA sequence"	
103818	2.6	AA150614		Other
105713	2.6	AA291321	ESTs	Other
114969	2.6	AA250775	ESTs	Other
130415	2.6	X07290	Human HF.12 gene mRNA	Other
101791	2.6	M83822	Human beige-like protein (BGL) mRNA; partial cds	Other
128131	2.6	A1283162	claudin 3	SS, TM
131564	2.6	AA491465	ESTs	Other
100279	2.6	D42084	Human mRNA for KIAA0094 gene; partial cds	Other
			methylenetetrahydrofolate dehydrogenase (NADP+ dependent); methenyltetrahydrofolate cyclohydrolase; formyltetrahydrofolate synthetase	
130149	2.6	J04031		Other
119888	2.6	W81710	ESTs	SS
126638	2.6	AA649257	ESTs	Other
131672	2.6	X12901	Human mRNA for villin	Other
134405	2.6	J04177	collagen; type XI; alpha 1	Other
			cyclin-dependent kinase 7 (homolog of Xenopus MO15 cdk-activating kinase)	
101188	2.5	L20320		TM
104534	2.5	R22303	ESTs; Weakly similar to putative p150 [H.sapiens]	Other
135179	2.5	U43747	Friedreich ataxia	SS
124308	2.5	H93575	ESTs	SS
125621	2.5	A1051602	acetyl-Coenzyme A acetyltransferase 2 (acetoacetyl Coenzyme A thiolase)	TM
101342	2.5	L76191	interleukin-1 receptor-associated kinase 1	Other
129351	2.5	AA167268	ESTs	Other
103774	2.5	AA092898	ESTs; Weakly similar to R07G3.8 [C.elegans]	Other
131289	2.5	AA485697	ESTs	SS, TM
132094	2.5	W01996	ESTs; Highly similar to (define not available 4929683) [H.sapiens]	Other
103223	2.5	X74801	chaperonin containing TCP1; subunit 3 (gamma)	Other

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FIGURE 11 (CONT)  
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PRIMEKEY	Fold Upregulated in Tumors	Exemplar Accession	Complete Title	ORF Structural Info
105610	2.5	AA279991	ESTs	Other
115719	2.5	AA416997	ESTs	Other
134888	2.5	AA148094	Tat-interacting protein (30kD)	Other
105564	2.5	AA262943	ESTs	Other
129689	2.5	AA130156	ESTs	Other
103391	2.5	X94453	pyrroline-5-carboxylate synthetase (glutamate gamma-semialdehyde synthetase)	Other
104182	2.5	AA479990	ESTs; Weakly similar to glioma amplified on chromosome 1 protein [H.sapiens]	SS, TM
123494	2.5	AA599786	ESTs	Other
122905	2.5	AA470070	ESTs	Other
109175	2.5	AA180496	ESTs	Other
129807	2.5	D80170	ESTs	Other
115142	2.4	AA258116	ESTs; Weakly similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]	Other
125474	2.4	AA151216	Homo sapiens 14-3-3 protein mRNA; complete cds	SS
125745	2.4	A1283493	ribophorin II	Other
100103	2.4	AF007875	dolichyl-phosphate mannosyltransferase polypeptide 1; catalytic subunit	Other
102687	2.4	U73379	Human cyclin-selective ubiquitin carrier protein mRNA; complete cds	Other
133170	2.4	U21049	epithelial protein up-regulated in carcinoma	SS, TM
109141	2.4	AA176428	ESTs	Other
132811	2.4	U25435	transcriptional repressor	Other
102862	2.4	X01057	interleukin 2 receptor; alpha	SS, TM
104300	2.4	D37933	syntaxin 1B	Other
105091	2.4	AA148859	ESTs; Moderately similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]	Other
110674	2.4	H89315	*yw25e09.s1 Morton Fetal Cochlea Homo sapiens cDNA clone IMAGE:253288 3', mRNA sequence."	TM
122571	2.4	AA452600	EST	Other
123421	2.4	AA598440	ESTs; Moderately similar to neuronal thread protein AD7c-NTP [H.sapiens]	Other
132181	2.4	AA046939	ESTs; Moderately similar to !!!! ALU SUBFAMILY SX WARNING ENTRY !!!! [H.sapiens]	Other
129445	2.4	AA306121	ESTs	SS
113923	2.4	W80763	ESTs; Moderately similar to FK506-binding protein 65kD [M.musculus]	Other
100598	2.4	HG2463-HT2 559	Guanine Nucleotide-Binding Protein G25k	Other
130869	2.4	AA128100	uridine monophosphate synthetase (orotate phosphoribosyl transferase and orotidine-5'-decarboxylase)	Other
132393	2.4	W85888	ESTs; Moderately similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]	Other
100830	2.4	HG4074-HT4 344	Rad2	Other
133765	2.4	D21255	cadherin 11 (OB-cadherin; osteoblast)	SS, TM
100867	2.4	HG4316-HT4 586	Transketolase-Like Protein	Other
119859	2.4	W80702	ESTs	Other
135289	2.4	M77698	YY1 transcription factor	Other
115140	2.4	AA258030	ESTs; Weakly similar to (define not available 3874821) [C.elegans]	Other
102162	2.4	U18291	CDC16 (cell division cycle 16; S. cerevisiae; homolog)	Other

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**FIGURE 11 (CONT)**  
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PRIMEKEY	Fold Upregulated in Tumors	Exemplar Accession	Complete Title	ORF Structural Info
100372	2.4	D79997	KIAA0175 gene product	TM
106981	2.4	AA521157	ESTs	Other
130114	2.4	AA234717	ESTs	Other
116129	2.3	AA459956	ESTs	Other
122235	2.3	AA436475	ESTs	Other
107315	2.3	T62771	Homo sapiens nucleoplasmin-3 (NPM3) mRNA; complete cds	SS
125905	2.3	T69868	chaperonin containing TCP1; subunit 2 (beta)	Other
133061	2.3	AB000584	prostate differentiation factor	SS
107531	2.3	Y13936	protein phosphatase 1G (formerly 2C); magnesium-dependent; gamma isoform	Other
125820	2.3	AA730136	teratocarcinoma-derived growth factor 1	Other
131725	2.3	AA456264	ESTs; Highly similar to (define not available 4176448) [H.sapiens]	Other
101228	2.3	L27706	chaperonin containing TCP1; subunit 6A (zeta 1)	Other
132571	2.3	R84594	ESTs; Highly similar to (define not available 4809026) [H.sapiens]	SS, TM
100090	2.3	AC002486	"Human BAC clone RG367017 from 7p15-p21, complete sequence [Homo sapiens]"	Other
103658	2.3	Z74615	collagen; type I; alpha 1	SS, TM
104897	2.3	AA054641	ESTs	Other
106818	2.3	AA480890	ESTs	Other
113077	2.3	T40442	ESTs	SS
128773	2.3	M28879	granzyme B (granzyme 2; cytotoxic T-lymphocyte-associated serine esterase 1)	SS
129506	2.3	AA258286	Homo sapiens mRNA for KIAA0877 protein; partial cds	TM
133746	2.3	U44378	MAD (mothers against decapentaplegic; Drosophila) homolog 4	Other
134272	2.3	X76040	Lon protease-like protein	Other
106267	2.3	AA431873	Homo sapiens clone 24711 mRNA sequence	Other
133493	2.3	AA284143	Homo sapiens chromosome 1 atrophin-1 related protein (DRPLA) mRNA; complete cds	Other
104278	2.3	C02582	ESTs; Highly similar to (define not available 5114045) [H.sapiens]	Other
127211	2.3	AA480935	"aa28c03.r1 NCI_CGAP_GCB1 Homo sapiens cDNA clone IMAGE:814564 5', mRNA sequence."	Other
110721	2.3	H97678	ESTs	Other
114774	2.3	AA150043	ESTs	TM
132968	2.3	N77151	Homo sapiens mRNA for KIAA0799 protein; partial cds	Other
106916	2.3	AA490814	ESTs	Other
113849	2.3	W60439	ESTs; Moderately similar to cbp146 [M.musculus]	Other
131028	2.3	U20240	CCAAT/enhancer binding protein (C/EBP); gamma	Other
130380	2.3	U55853	Homo sapiens 130 kD Golgi-localized phosphoprotein (GPP130) mRNA; complete cds	SS
125390	2.3	H95094	KIAA0016 gene product	SS, TM
127256	2.3	AA327550	ESTs; Weakly similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]	Other
132116	2.3	AA234767	ESTs	SS, TM
117765	2.3	N47797	ESTs	Other
119126	2.3	R45175	ESTs	Other
129482	2.2	AA435849	ESTs; Moderately similar to unknown protein [H.sapiens]	Other
120493	2.2	AA255933	ESTs	SS
108927	2.2	AA143493	ESTs; Weakly similar to PLECKSTRIN [H.sapiens]	Other

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## FIGURE 11 (CONT)

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PRIMEKEY	Fold Upregulated in Tumors	Exemplar Accession	Complete Title	ORF Structural Info
122520	2.2	AA449427	ESTs; Moderately similar to pregnancy-specific beta-1 glycoprotein 2 [H.sapiens]	Other
125982	2.2	R98091	RAE1 (RNA export 1; S.pombe) homolog	Other
132325	2.2	N37065	ESTs; Moderately similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]	Other
100287	2.2	D43950	Human mRNA for KIAA0098 gene; partial cds	Other
114895	2.2	AA236177	Homo sapiens mRNA for KIAA0887 protein; partial cds	Other
105038	2.2	AA130273	ESTs; Weakly similar to (define not available 4240269) [H.sapiens]	Other
105476	2.2	AA255473	ESTs	SS
106942	2.2	AA496347	ESTs; Highly similar to gene 7442 protein [H.sapiens]	Other
110566	2.2	H59990	ESTs	Other
111068	2.2	N58397	ESTs	Other
127963	2.2	A1299013	"qn13h12.x1 NCI_CGAP_Lu5 Homo sapiens cDNA clone IMAGE:1898183 3' similar to TR:022813 022813 PUTATIVE NAD(P)-DEPENDENT CHOLESTEROL DEHYDROGENASE. ; mRNA sequence."	TM
130985	2.2	AA243700	ESTs	Other
132877	2.2	R40685	Homo sapiens mRNA for KIAA0851 protein; complete cds	TM
135242	2.2	M74093	cyclin E1	TM
129468	2.2	J03040	secreted protein; acidic; cysteine-rich (osteonectin)	SS
132616	2.2	AA386264	ESTs	SS, TM
133780	2.2	M14219	decorin	Other
121853	2.2	AA425887	ESTs	Other
114608	2.2	AA079381	ESTs	Other
129017	2.2	H13108	ESTs	SS
132725	2.2	L41887	splicing factor; arginine/serine-rich 7 (35kD)	Other
125606	2.2	R28463	ESTs	SS
105538	2.2	AA258860	ESTs; Highly similar to (define not available 4583654) [H.sapiens]	Other
133221	2.2	AA235289	ESTs; Highly similar to rap2 gene product [H.sapiens]	Other
106389	2.2	AA446949	ESTs	Other
128949	2.2	AA190993	a disintegrin and metalloproteinase domain 12 (meltrin alpha)	Other
120869	2.2	AA398116	ESTs	Other
102495	2.2	U51240	Human mRNA for KIAA0085 gene; partial cds	TM
101124	2.2	L10343	protease inhibitor 3; skin-derived (SKALP)	SS
102778	2.2	U83463	syndecan binding protein (syntenin)	Other
107307	2.2	T52099	creatine kinase; mitochondrial 2 (sarcomeric)	Other
111605	2.2	R11638	ESTs	Other
101959	2.2	S80343	arginyl-tRNA synthetase	Other
101031	2.2	J05070	matrix metalloproteinase 9 (gelatinase B; 92kD gelatinase; 92kD type IV collagenase)	SS
131701	2.2	AA149008	ESTs; Weakly similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]	Other
105344	2.2	AA235303	ESTs	TM
103166	2.2	X67951	proliferation-associated gene A (natural killer-enhancing factor A)	Other
131463	2.2	X74142	forkhead (Drosophila)-like 1	Other
131412	2.2	U34044	Human selenium donor protein (seD) mRNA; complete cds	Other
134982	2.2	N46086	ESTs	Other
127236	2.1	A1341818	budding uninhibited by benzimidazoles 1 (yeast homolog)	Other
104459	2.1	M91493	EST	Other

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**FIGURE 11 (CONT)**  
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PRIMEKEY	Fold Upregulated in Tumors	Exemplar Accession	Complete Title	ORF Structural Info
124596	2.1	N70088	ESTs	Other
105650	2.1	AA282347	ESTs; Highly similar to (define not available 4454694) [H.sapiens]	Other
134917	2.1	X87241	FAT tumor suppressor (Drosophila) homolog	SS
132478	2.1	H20906	Homo sapiens mRNA for KIAA0746 protein; partial cds	SS, TM
134464	2.1	N79354	ESTs; Weakly similar to Rga [D.melanogaster]	Other
111221	2.1	N68869	ESTs	Other
100892	2.1	HG4557-HT4 962	"Small Nuclear Ribonucleoprotein U1, 1snrp"	Other
117170	2.1	H98153	ESTs	Other
124049	2.1	F10523	primase; polypeptide 2A (58kD)	Other
131692	2.1	D50914	Human mRNA for KIAA0124 gene; partial cds	TM
103003	2.1	X52003	trefoil factor 1 (breast cancer; estrogen-inducible sequence expressed in)	SS
134085	2.1	U20979	chromatin assembly factor 1 (150 kDa)	Other
126216	2.1	N23870	ESTs	Other
102721	2.1	U79241	Human clone 23759 mRNA; partial cds	Other
128040	2.1	AA918528	ESTs	Other
101038	2.1	J05249	replication protein A2 (32kD)	SS
106060	2.1	AA417287	C-terminal binding protein 2	Other
103622	2.1	Z48042	basic transcription factor 3	Other
127884	2.1	AA768630	ESTs	Other
130911	2.1	W72906	HIRA interacting protein 4 (dnaJ-like)	Other
104280	2.1	AF008192	Homo sapiens putative GR6 protein (GR6) mRNA; complete cds	Other
120714	2.1	AA292689	ESTs	Other
101578	2.1	M34423	galactosidase; beta 1	SS
113443	2.1	T86158	ESTs	SS
101516	2.1	M28249	Accession not listed in Genbank	Other
106480	2.1	AA450373	ESTs; Moderately similar to !!!! ALU SUBFAMILY SB WARNING ENTRY !!!! [H.sapiens]	Other
111365	2.1	N92659	ESTs	Other
121121	2.1	AA399371	ESTs; Weakly similar to (define not available 4688925) [H.sapiens]	Other
124768	2.1	R40177	ESTs	Other
102501	2.1	U51586	Human siah binding protein 1 (SiahBP1) mRNA; partial cds	Other
106432	2.1	AA448850	ESTs	Other
132812	2.1	R48108	ESTs	Other
125681	2.1	AA394176	accessory proteins BAP31/BAP29	TM
130511	2.1	L32137	cartilage oligomeric matrix protein	Other
128219	2.1	AA978333	ESTs	Other
130962	2.1	AA102051	transmembrane 4 superfamily member 6	SS, TM
101840	2.1	M93056	protease inhibitor 2 (anti-elastase); monocyte/neutrophil	TM
123928	2.1	AA621363	EST	Other
132073	2.1	N67408	ESTs; Moderately similar to !!!! ALU SUBFAMILY SC WARNING ENTRY !!!! [H.sapiens]	Other
101671	2.1	M61832	S-adenosylhomocysteine hydrolase	Other
107059	2.1	AA608545	ESTs	Other
132791	2.1	AA446088	ESTs; Weakly similar to YY1-associated factor 2 [H.sapiens]	Other
103131	2.1	X65614	S100 calcium-binding protein P	Other
104791	2.1	AA029046	ESTs	Other

FIGURE 11 (CONT)  
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PRIMEKEY	Fold Upregulated in Tumors	Exemplar Accession	Complete Title	ORF Structural Info
135181	2.1	AA621349	ESTs; Weakly similar to similar to Yeast hypothetical protein L8167.12 like [C.elegans]	Other
104334	2.1	D82614	ESTs	Other
132103	2.1	AA025086	ESTs	Other
126743	2.1	AA179253	poly(A)-binding protein-like 1	Other
100439	2.1	D87453	Human mRNA for KIAA0264 gene; partial cds	Other
114860	2.1	AA235112	ESTs; Moderately similar to similar to murine RNA-binding protein [H.sapiens]	Other
116732	2.1	F13779	ESTs; Weakly similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]	Other
131045	2.1	H30863	ESTs; Weakly similar to The KIAA0132 gene product is related to Drosophila melanogaster ring canal protein. [H.sapiens]	Other
133209	2.1	AA114183	ESTs; Moderately similar to glutamate pyruvate transaminase [H.sapiens]	Other
101758	2.1	M77836	Human pyrroline 5-carboxylate reductase mRNA; complete cds	Other
102214	2.1	U23752	SRY (sex-determining region Y)-box 11	Other
130100	2.1	AA425593	ESTs	Other
109799	2.1	F10770	Homo sapiens clone 669 unknown mRNA; complete sequence	Other
130860	2.1	U66061	T-cell receptor; beta cluster	SS, TM
106685	2.1	AA461551	ESTs; Highly similar to 73 kDa subunit of cleavage and polyadenylation specificity factor [H.sapiens]	TM
125724	2.1	AA083407	stimulated trans-acting factor (50 kDa)	Other
134258	2.1	L28010	heterogeneous nuclear ribonucleoprotein F	Other
129642	2.1	R50008	7-dehydrocholesterol reductase	TM
125336	2.1	T86823	ESTs	Other
125303	2	Z39821	ESTs	Other
100749	2	HG3521-HT3 715	Ras-Related Protein Rap1b	Other
126185	2	A1393989	ESTs	TM
128880	2	A1151406	ESTs	SS, TM
105263	2	AA227926	ESTs	Other
123288	2	AA495836	EST	Other
105807	2	AA393803	ESTs	Other
105040	2	AA131047	KIAA0698 gene product	TM
131977	2	F09788	procollagen-proline; 2-oxoglutarate 4-dioxygenase (proline 4-hydroxylase); alpha polypeptide II	SS
117992	2	N52000	ESTs	SS, TM
134037	2	X53586	Human mRNA for integrin alpha 6	SS
132744	2	X54326	glutamyl-prolyl-tRNA synthetase	Other
101581	2	M34996	"Human MHC cell surface glycoprotein (HLA-DQA) mRNA, 3'end"	SS, TM
103576	2	Z26317	desmoglein 2	SS
131235	2	AA223284	ESTs; Moderately similar to (define not available 4680395) [H.sapiens]	Other
127910	2	AA781881	ESTs; Weakly similar to sperm fertilization protein sp56 precursor [M.musculus]	SS
101552	2	M31642	hypoxanthine phosphoribosyltransferase 1 (Lesch-Nyhan syndrome)	Other
106318	2	AA436570	Homo sapiens mRNA for pre-mRNA cleavage factor I subunit	Other
101192	2	L20859	Human leukemia virus receptor 1 (GLVR1) mRNA; complete cds	TM
104592	2	R81003	Homo sapiens serine protease mRNA; complete cds	SS
129095	2	L12350	thrombospondin 2	SS

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FIGURE 11 (CONT)  
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PRIMEKEY	Fold Upregulated in Tumors	Exemplar Accession	Complete Title	ORF Structural Info
105705	2	AA290767	ESTs	Other
128461	2	M63262	arachidonate 5-lipoxygenase-activating protein	SS, TM

Primary Key	Chromosome	Accession	Gene Description	Structural Info
16074	>10	AA001507	ESTs	other
25047	>10	AA011031	ESTs	other
25082	>10	AA017257	ESTs	other
16490	>10	AA026418	ESTs	other
25179	>10	AA031268	H.sapiens mR	other
25215	>10	AA035540	APOLIPOPRO	other
25282	>10	AA044825	ESTs	other
16810	>10	AA053636	ESTs	other
16835	>10	AA054438	ESTs	SS,
10747	>10	AA055841	ESTs	other
10748	>10	AA055892	ESTs	other
16993	>10	AA065300	Human mRNA	other
17051	>10	AA070801	ESTs	TM
10840	>10	AA084104	ESTs	other
7296	>10	AA085661	ESTs	other
7325	>10	AA090842	ESTs Weakly	other
17419	>10	AA113349	EST	?
17541	>10	AA127459	ESTs	other
17559	>10	AA128407	ESTs	other
25669	>10	AA128978	ESTs	?
17600	>10	AA130596	ESTs	other
10992	>10	AA132523	Homo sapiens	other
17654	>10	AA133250	ESTs	TM
17734	>10	AA137246	ESTs	other
25801	>10	AA148530	EST - RC_AA	TM
25806	>10	AA149007	EST	?
11121	>10	AA156359	Human TAR D	?
11160	>10	AA164289	ESTs	other
25925	>10	AA164494	ESTs Weakly	other
25934	>10	AA165355	Human clone	?
17987	>10	AA169379	ESTs	other
18008	>10	AA171895	Homo sapiens	TM
33953	>10	AA173290	Human HOXA	other
33980	>10	AA180223	CAMP-DEPEN	other
34013	>10	AA190888	EST - RC_AA	other
34014	>10	AA191348	ESTs	other
34015	>10	AA191353	ESTs	TM
34070	>10	AA196549	ESTs	other
18260	>10	AA206801	ESTs	?
34105	>10	AA207123	ESTs	SS,
34107	>10	AA209469	ESTs	other
18330	>10	AA216722	Human mRNA	TM
18362	>10	AA223912	Ribonuclease	other
18392	>10	AA227751	ESTs	SS,
34188	>10	AA228030	ESTs	TM
34197	>10	AA232315	Homo sapiens	other
25948	>10	AA234365	Homo sapiens	?
25951	>10	AA234556	EST	?
11561	>10	AA236533	Evi-1	other
26059	>10	AA236685	ESTs	other
26100	>10	AA242835	Human mRNA	other
11603	>10	AA243052	ESTs Highly	other
7785	>10	AA243375	EST - AA2433	other
34372	>10	AA251973	ESTs	?
26240	>10	AA252282	Human mRNA	TM

FIGURE 12

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34382	>10	AA252512	ESTs	other
34391	>10	AA252703	EST - RC_AA	other
26274	>10	AA253011	ESTs	?
34400	>10	AA253400	ESTs	other
26291	>10	AA253422	ESTs	?
26355	>10	AA256379	ESTs	other
11813	>10	AA258158	ESTs	other
34518	>10	AA278721	ESTs	?
26545	>10	AA278979	ESTs	other
26574	>10	AA279504	ESTs	other
34554	>10	AA280016	DNA polymera	other
34561	>10	AA280298	ESTs	TM
26628	>10	AA280641	ESTs Highly	TM
11869	>10	AA280670	ESTs	SS,
34575	>10	AA280738	ESTs	TM
26677	>10	AA281636	ESTs	?
26700	>10	AA282197	EST	?
34672	>10	AA284372	ESTs	other
34692	>10	AA285079	ESTs	other
12143	>10	AA290991	ESTs	other
8092	>10	AA316272	ESTs	TM
34904	>10	AA321746	EST	other
8111	>10	AA323787	ESTs	other
8125	>10	AA330771	Human protein	TM
26916	>10	AA331393	ESTs	other
26926	>10	AA342402	ESTs	other
26935	>10	AA347193	ESTs Weakly	TM
35038	>10	AA350541	ESTs Modera	TM
35049	>10	AA350857	ESTs	other
35106	>10	AA371561	EST Weakly s	?
35197	>10	AA398120	ESTs	other
35277	>10	AA398536	ESTs	other
35309	>10	AA398660	EST	other
35322	>10	AA398710	H. sapiens RN	TM
27037	>10	AA400198	ESTs	TM
35495	>10	AA400527	ESTs	?
27046	>10	AA400670	Homo sapiens	other
35500	>10	AA400715	ESTs	other
12480	>10	AA403116	Homo sapiens	other
35693	>10	AA405485	ESTs Weakly	other
35697	>10	AA405512	ESTs	other
35766	>10	AA406169	Homo sapiens	other
35769	>10	AA406206	ESTs	other
35798	>10	AA410231	ESTs	other
35801	>10	AA410291	ESTs	other
35803	>10	AA410295	ESTs	other
35822	>10	AA411144	ESTs	TM
35874	>10	AA412024	EST	?
35958	>10	AA412550	ESTs	other
36052	>10	AA417027	EST	TM
36258	>10	AA423962	ESTs Weakly	other
36288	>10	AA424502	ESTs	other
36307	>10	AA424803	EST	?
36371	>10	AA426017	ESTs	TM
36395	>10	AA426353	ESTs	other
36405	>10	AA426406	Homo sapiens	other

**FIGURE 12**  
**(cont.)**

36506	>10	AA429610	ESTs	other
36571	>10	AA430726	EST - RC_AA	SS,
36695	>10	AA433910	ESTs	other
36739	>10	AA435610	EST - RC_AA	?
36753	>10	AA435686	ESTs	other
36845	>10	AA436198	ESTs	?
13136	>10	AA436560	ESTs	SS,TM
13143	>10	AA436619	ESTs	SS,
36958	>10	AA442060	ESTs	other
36962	>10	AA442082	ESTs	?
36981	>10	AA442845	EST	?
13237	>10	AA443971	ESTs Weakly	?
13242	>10	AA445994	ESTs	other
37057	>10	AA446131	ESTs	other
37068	>10	AA446312	ESTs Weakly	other
37074	>10	AA446344	ESTs	SS,
37084	>10	AA446486	Homo sapiens	?
37135	>10	AA447540	EST	?
37159	>10	AA447714	EST - RC_AA	other
37168	>10	AA447772	ESTs	?
37246	>10	AA449311	Homo sapiens	other
37310	>10	AA451707	ESTs	other
37453	>10	AA454610	ESTs	?
37456	>10	AA454632	ESTs	TM
27787	>10	AA454660	ESTs	?
37492	>10	AA455248	EST - RC_AA	other
37546	>10	AA456641	ESTs	TM
37601	>10	AA458864	ESTs	other
37611	>10	AA458996	Human signal	SS,TM
37615	>10	AA459101	Human serine	other
37653	>10	AA460017	ESTs	other
37677	>10	AA460530	Homo sapiens	other
37777	>10	AA464860	Homo sapiens	other
8648	>10	AA465016	Homo sapiens	?
37816	>10	AA469954	EST	?
37829	>10	AA470084	ESTs	other
28015	>10	AA477421	ESTs	other
37978	>10	AA479294	EST - RC_AA	other
37979	>10	AA479295	ESTs Highly	other
37983	>10	AA479348	H.sapiens mR	other
14054	>10	AA485223	ESTs	TM
38121	>10	AA485724	EST - RC_AA	other
28122	>10	AA485928	ESTs Weakly	other
38167	>10	AA487207	EST - RC_AA	other
38172	>10	AA487424	EST - RC_AA	other
38179	>10	AA487492	Homo sapiens	other
38182	>10	AA487501	ESTs	other
38194	>10	AA487969	ESTs	other
28141	>10	AA488432	ESTs	?
38211	>10	AA488687	ESTs	other
38235	>10	AA489030	ESTs	other
38280	>10	AA489791	EST - RC_AA	other
38316	>10	AA490500	Homo sapiens	other
38330	>10	AA490882	ESTs	other
38456	>10	AA504343	ESTs	SS,
38460	>10	AA504462	ESTs	other

**FIGURE 12**  
**(cont.)**

38553	>10	AA521471	ESTs	other
38580	>10	AA598545	ESTs	?
38590	>10	AA598648	Human mRNA	other
38601	>10	AA598738	ESTs	?
28323	>10	AA599639	ESTs	other
38828	>10	AA609177	ESTs	TM
38838	>10	AA609215	EST - RC_AA	?
38867	>10	AA609318	Human cbl-b	TM
38871	>10	AA609333	EST	?
38970	>10	AA609749	ESTs	other
38984	>10	AA609839	ESTs Modera	?
39045	>10	AA610077	ESTs	other
39062	>10	AA620333	EST	?
39080	>10	AA620552	EST - RC_AA	?
39110	>10	AA620709	ESTs Weakly	other
39176	>10	AA621091	ESTs	other
39218	>10	AA621330	ESTs	other
39221	>10	AA621346	Homo sapiens	other
39232	>10	AA621409	ESTs	other
21	>10	AB000905	H.sapiens hist	?
8963	>10	AFFX-HUMT	AFFX-HUMT	?
33890	>10	AFFX-HUMT	AFFX-HUMT	?
39302	>10	C14944	ESTs	other
39329	>10	C20797	EST	?
28644	>10	D12163	ESTs	other
218	>10	D13540	PROTEIN-TYR	other
236	>10	D13645	Human mRNA	other
9127	>10	D30037	PHOSPHATID	other
459	>10	D38293	Human mRNA	TM
39405	>10	D50975	ESTs	other
39433	>10	D52037	Human thymid	other
39436	>10	D52692	Human Ca2+	TM
14708	>10	D59388	EST	?
39488	>10	D60831	ESTs	other
39504	>10	D80632	ESTs	other
765	>10	D86096	Prostaglandin	?
787	>10	D86969	Human mRNA	other
789	>10	D86971	Human mRNA	other
39529	>10	F02202	ESTs	?
39535	>10	F02450	ESTs Modera	TM
18676	>10	F04022	ESTs	other
18718	>10	F04915	ESTs	other
18762	>10	F09458	ESTs	other
18782	>10	F09739	ESTs	other
29080	>10	F13655	ESTs Modera	other
19001	>10	H02890	ESTs	other
19164	>10	H10395	EST	?
39725	>10	H11323	ESTs	other
19203	>10	H11593	ESTs	other
19328	>10	H17808	ESTs	other
19387	>10	H20128	ESTs	?
39787	>10	H20131	ESTs	SS,
19389	>10	H20165	EST	?
39832	>10	H26279	EST - RC_H2	other
19591	>10	H40688	ESTs	other
29229	>10	H48459	Human mRNA	other

## FIGURE 12 (cont.)

19727	>10	H52702	ESTs	?
19787	>10	H56679	ESTs	other
39995	>10	H62474	EST	SS,TM
29331	>10	H68116	ESTs	TM
29344	>10	H68839	EST	?
40064	>10	H72283	Human mRNA	other
40083	>10	H73466	MITOCHOND	other
19949	>10	H78263	ESTs	TM
40204	>10	H88296	EST - RC_H8	other
29523	>10	H88353	ESTs Weakly	?
29551	>10	H90134	ESTs	?
29645	>10	H95840	ESTs	?
20057	>10	H98079	ESTs	other
976	>10	HG2036-HT2	EST - HG2036	?
1158	>10	HG3344-HT3	EST - HG3344	?
1210	>10	HG37-HT37	EST - HG37-H	?
1346	>10	HG4716-HT5	EST - HG4716	?
1349	>10	HG4747-HT5	EST - HG4747	?
1445	>10	J03027	MHC class I p	?
1570	>10	K01383	EST - K01383	?
1684	>10	L07541	Replication fa	other
1852	>10	L17328	Human FEZ2	TM
1856	>10	L18920	MELANOMA-A	?
1863	>10	L19161	TRANSLATIO	other
2070	>10	L37378	Homo sapiens	SS,TM
2123	>10	L40396	Homo sapiens	other
2144	>10	L41349	Phospholipase	SS,
9723	>10	L44542	ESTs	other
2188	>10	L47276	EST - L47276	other
2343	>10	M15353	Eukaryotic tra	other
2627	>10	M29610	Glycophorin E	TM
2857	>10	M58597	Fucosyltransfe	TM
3021	>10	M68941	Protein tyrosin	other
3163	>10	M84424	Cathepsin E	?
3196	>10	M86917	Oxysterol bind	other
20088	>10	N20054	ESTs Weakly	?
29795	>10	N20641	ESTs Highly	other
40427	>10	N21147	ESTs	other
40444	>10	N22140	ESTs Highly	other
29893	>10	N23003	ESTs	TM
40498	>10	N26086	Homo sapiens	SS,
40559	>10	N33024	ESTs	SS,
30190	>10	N33264	EST	?
30207	>10	N33920	H.sapiens mR	other
20304	>10	N34686	Homo sapiens	?
20307	>10	N34830	ESTs	other
30265	>10	N35115	ESTs	other
40594	>10	N35388	ESTs	other
40604	>10	N38893	Homo sapiens	other
40631	>10	N45124	ESTs	other
40660	>10	N49104	NUCLEAR FA	other
30610	>10	N50138	EST	?
30617	>10	N50646	ESTs	other
30631	>10	N50807	EST	?
30790	>10	N52935	EST	?
20564	>10	N55443	ESTs	TM

**FIGURE 12**  
**(cont.)**



40760	>10	N57927	ESTs Weakly	other
30938	>10	N58561	Cathepsin B	other
20814	>10	N59230	ESTs	SS,
20857	>10	N62889	ESTs	other
31136	>10	N63512	ESTs Weakly	TM
40827	>10	N64051	Homo sapiens	other
31310	>10	N66831	EST	?
40876	>10	N67607	Human Rho-a	other
20791	>10	N68057	Homo sapiens	?
40905	>10	N68738	ESTs	other
40911	>10	N69114	H.sapiens mR	other
40913	>10	N69218	ESTs	other
31484	>10	N69466	ESTs	other
31619	>10	N73449	ESTs	other
41005	>10	N79516	ESTs	TM
31818	>10	N89774	Homo sapiens	other
31872	>10	N91109	EST	other
41040	>10	N91948	ESTs	other
31944	>10	N93193	ESTs	other
41065	>10	N93618	ESTs	other
32034	>10	N98926	ESTs Modera	other
41107	>10	R01634	ESTs	other
41163	>10	R08176	ESTs	other
21238	>10	R08564	Plasminogen-	other
21240	>10	R08613	ESTs	other
21412	>10	R20670	ESTs	other
21519	>10	R27975	EST - RC R2	other
41381	>10	R42278	H.sapiens mR	?
32189	>10	R43183	ESTs	TM
32195	>10	R43471	ESTs Weakly	other
21902	>10	R43822	EST	?
21946	>10	R44707	ESTs	TM
22072	>10	R49406	ESTs	?
32240	>10	R50976	Ribonuclease	other
32258	>10	R55623	ESTs	other
22258	>10	R56432	ESTs	other
22282	>10	R59197	ESTs	other
32277	>10	R61493	Human mRNA	other
22372	>10	R62831	EST	?
22400	>10	R64109	ESTs	other
41593	>10	R64129	ESTs	other
10233	>10	R71427	ESTs Highly	other
41654	>10	R76437	THROMBOXA	TM
22557	>10	R76722	ESTs	other
22576	>10	R79111	ESTs	other
22593	>10	R79777	EST	?
41678	>10	R80675	EST	?
41719	>10	R89260	EST - RC R8	other
22793	>10	R96208	ESTs	other
41752	>10	R97063	ESTs	other
3375	>10	S50223	HKR-T1	other
3406	>10	S66896	SQUAMOUS	other
3522	>10	S80267	Spleen tyrosin	other
41793	>10	T03887	ESTs	?
23198	>10	T40530	ESTs Weakly	other
23360	>10	T58531	ESTs	other

**FIGURE 12**  
**(cont.)**

32635	>10	T61116	ESTs	other
42177	>10	T79786	ESTs	?
23623	>10	T84047	ESTs	?
23662	>10	T86674	ESTs	other
42242	>10	T89579	Homo sapiens	other
23759	>10	T90313	ESTs	other
23832	>10	T92018	ESTs	other
32740	>10	T92950	ESTs	other
42290	>10	T95105	ESTs	?
3598	>10	U01157	Glucagon-like	SS,TM
3659	>10	U04313	Protease inhib	other
3799	>10	U10690	Human MAG	?
3870	>10	U14518	Centromere p	other
3913	>10	U16261	Human MDA-	SS,
4029	>10	U21090	Human DNA p	other
4157	>10	U28811	Human cystei	other
4178	>10	U30246	Human burne	TM
15006	>10	U30246	Human burne	TM
4193	>10	U31116	Human beta-s	TM
4306	>10	U36798	Homo sapiens	TM
4362	>10	U39817	Bloom syndr	other
4386	>10	U40622	DNA repair pr	other
4388	>10	U40714	Human tyrosy	other
4455	>10	U43944	MALATE OXID	other
4477	>10	U45880	Human IAP-lik	other
4680	>10	U55766	Human Rev in	TM
4702	>10	U57341	EST - U5734	other
4713	>10	U57721	Human L-kyru	other
4787	>10	U61145	Human enhan	other
4862	>10	U65437	Human homeo	?
4945	>10	U69108	Homo sapiens	other
4975	>10	U71088	Human MEK5	other
4994	>10	U72514	Human C2f m	other
5002	>10	U72761	Human karyop	other
5021	>10	U73524	Human putativ	TM
5149	>10	U79716	Human reel in	SS,
5214	>10	U83303	H.sapiens mR	?
5243	>10	U85946	Human brain s	other
32789	>10	W02779	ESTs Modera	other
42354	>10	W19346	ESTs	other
42390	>10	W40150	Homo sapiens	other
33006	>10	W46286	ESTs Weakly	TM
33020	>10	W46891	ESTs Weakly	other
33109	>10	W59961	Human mRNA	other
24197	>10	W67277	ESTs	other
24215	>10	W69425	ESTs	other
33301	>10	W73883	ESTs	other
33343	>10	W79834	ESTs Weakly	other
33377	>10	W81219	ESTs Weakly	other
42602	>10	W86423	ESTs	TM
33556	>10	W90705	Murine leukem	other
33616	>10	W93726	Protease inhib	other
33666	>10	W95876	ESTs	TM
5510	>10	X05360	Cell division c	?
5558	>10	X07876	Wingless-type	SS,
5603	>10	X14253	Teratocarcino	TM

## FIGURE 12 (cont.)

5619	>10	X14850	HISTONE H2A	SS,
5623	>10	X14975	T-CELL SURF	?
5692	>10	X17644	G1 to S phase	other
5789	>10	X54925	Matrix metallo	other
5799	>10	X55330	Aspartylglucos	SS,
5802	>10	X55544	CYCLIC-AMP	?
5857	>10	X58377	Human mRNA	other
5960	>10	X63575	ATPase Ca++	TM
5963	>10	X63629	Cadherin 3 (F	SS, TM
5986	>10	X64810	Proprotein con	?
6041	>10	X67155	MITOTIC KIN	other
6095	>10	X69962	Fragile X mer	other
6106	>10	X70683	SRY (sex dete	TM
6155	>10	X74331	DNA primase	other
6167	>10	X74987	Ribonuclease	other
6188	>10	X76029	NEUROMED	TM
6315	>10	X81889	H.sapiens mR	other
6382	>10	X85133	H.sapiens RB	other
6384	>10	X85137	Human kines	other
6438	>10	X89398	URACIL-DNA	?
6449	>10	X89986	H.sapiens mR	TM
6478	>10	X91648	H.sapiens mR	SS, TM
6479	>10	X91653	EST - X91653	?
6494	>10	X92689	H.sapiens mR	TM
6713	>10	Y08564	EST - Y08564	?
6790	>10	Y12394	Homo sapiens	other
24915	>10	YEL003w/	EST - YEL003	?
42773	>10	YEL019c/MM	EST - YEL019	?
24545	>10	Z38462	ESTs	other
33713	>10	Z39427	ESTs	other
33791	>10	Z40883	ESTs	other
42766	>10	Z99394	ESTs Moder	other
21558	>10	R33112	Human AF-6 m	other
26718	>10	AA282576	ESTs	?
40113	.9955090946	H78003	ESTs	?
10801	.9879448276	AA069285	ESTs Weakly	other
37491	.9513600842	AA455239	ESTs Highly	other
23900	.9272347693	T95789	ESTs	other
254	.9198395324	D14657	Human mRNA	other
6885	.8970927914	Z29331	Ubiquitin-conj	other
29693	.8850766398	H97819	ESTs	SS,
26482	.8765189024	AA262491	ESTs	other
23123	.8699502035	T25306	EST	?
26525	.8160399123	AA278392	ESTs	other
13110	.7643356605	AA435840	Homo sapiens	other
34863	.7087597628	AA299784	EST	other
39432	.7034550083	D51691	Phosphoribos	?
31312	.6513325386	N66845	ESTs Weakly	?
21112	.6358446349	R01179	ESTs	?
31572	.6254820695	N71294	ESTs	other
17903	.6221229759	AA160259	EST	?
20747	.6094813734	N66842	ESTs	other
4676	9.589223908	U55206	Homo sapiens	TM
34363	.5627081023	AA251587	Homo sapiens	other
39094	9.540768988	AA620636	ESTs	other
3888	.5372000133	U15128	Human beta-1	?

## FIGURE 12 (cont.)

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39386	.9.506250529	D12184	ESTs	TM
7674	.4458059039	AA203742	ESTs	other
4192	.4329744134	U31099	Human DP pri	TM
4507	9.422674945	U47050	Human putativ	TM
35606	9.412026255	AA402227	ESTs Modera	other
4970	.3649551013	U70862	Human nuclea	?
19829	.3432151573	H58813	EST	?
14837	.2878584141	T40145	ESTs	TM
17336	.2822148678	AA099585	ESTs	other
40541	.2532836505	N30160	ESTs	other
29496	.2487643833	H85434	EST	?
29943	.1797074262	N24786	ESTs Modera	TM
17997	.1629681314	AA169633	EST	other
21320	.1243463318	R11673	ESTs	other
13883	.1178796537	AA476917	ESTs Weakly	other
30539	.0886887776	N49072	ESTs	other
32778	.0877919549	W02063	EST	?
26380	.0809559378	AA257012	EST	?
15888	.0595893607	X95632	Human Abl in	other
40812	.0012874244	N63419	ESTs	other
903	.9640387908	D90070	ATL-derived P	other
22674	.9515777733	R87160	ESTs	TM
40807	.9510132281	N62995	TRANSCRIPT	other
15244	.9195644974	W00904	ESTs	TM
32296	.8658776567	R67075	Zinc finger pro	other
18269	.8575656769	AA209467	ESTs	other
19662	.8507626284	H47391	ESTs	other
41607	8.833925517	R67868	CLEAVAGE S	other
2548	.8299864699	M25897	Platelet factor	TM
7736	.8279341243	AA232121	Human tyrosy	other
34490	.7844537272	AA262354	ESTs	other
38658	.7669313482	AA599477	ESTs	other
7528	8.765157554	AA149543	ESTs	other
39939	.7555031142	H53454	EST - RC_H5	other
25111	.7232692309	AA020787	ESTs	other
21655	8.716167279	R38239	EST	?
39663	8.665982852	H04756	ESTs Highly	other
1042	8.652112324	HG2510-HT2	EST - HG2510	?
32330	.6361115426	R77776	ESTs	other
25382	.6239456487	AA059007	ESTs	other
27074	.5900813076	AA401475	ESTs Weakly	SS,
3955	.5298909183	U18259	MHC class II	other
4959	8.52646827	U70322	Human transp	other
2315	.5259185808	M14123	EST - M14123	?
37253	.4896914632	AA449357	ESTs	other
39624	8.471316877	F10836	ESTs	?
23213	.4569920887	T40891	ESTs	?
2798	8.455596435	M54995	Connective tis	TM
41154	.4413390141	R07499	ESTs	?
32479	.4093689549	T16282	WEE1-LIKE P	other
41251	.3587565415	R28279	Human clone	other
19081	.3583603183	H06701	ESTs Weakly	other
21098	.3105927559	R00545	ESTs	other
14723	.3061679053	D59894	ESTs	other
37154	.2994822341	AA447666	Human CENP	other
8068	.2835586361	AA313387	ESTs Highly	other

## FIGURE 12 (cont.)

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7485	.8281679348	AA129547	ESTs	other
16501	.2517969834	AA026969	ESTs	other
34527	.2419163754	AA279091	ESTs	other
6700	.1948675662	Y07867	H.sapiens mR	other
2852	.1928816537	M58460	Human 75-kD	other
11188	.1862492468	AA172372	ESTs	TM
42293	.8.183311064	T95333	ESTs Weakly	TM
5443	.1763317544	X02530	Interferon (gam	SS,
40937	.1534810594	N70607	ESTs	TM
23371	.1499496068	T59505	EST - RC_T59	?
26272	.1339974518	AA252981	ESTs Weakly	other
17306	.1332403762	AA086201	ESTs	other
18497	.1192326373	AA233795	ESTs	other
235	.0944363901	D13644	Human mRNA	other
24525	.0860187097	Z38347	ESTs	TM
7826	.0750029554	AA248884	EST - AA2488	TM
32142	.0739258775	R38715	Homo sapiens	other
39067	.0557768803	AA620405	ESTs	other
6235	.0448957236	X78416	Casein alpha	TM
29517	.0017588725	H88261	ESTs	other
28570	.9852455973	C21104	Homo sapiens	other
39344	.9162087762	C21034	ESTs Modera	other
18951	.9002189759	H00580	ESTs	other
18953	.8709160227	H00615	ESTs	other
18376	.8564099916	AA226925	ESTs	other
19830	.7.847878447	H58911	ESTs	other
36023	.7.840835828	AA416881	ESTs	other
13347	.8344414518	AA449238	ESTs	other
36614	.8284591351	AA431466	ESTs	other
2192	.8254072032	L48211	Homo Sapien	?
33016	.8006574068	W46577	H.sapiens mR	other
17215	.7941954038	AA083044	ESTs	other
34894	.7659738105	AA311881	EST	?
40614	.7.695001222	N39257	ESTs	other
36295	.6834749899	AA424534	ESTs	other
19564	.6744302788	H38833	ESTs	TM
16914	.6686405336	AA058665	ESTs	SS,
35967	.6378079107	AA412694	Human splicin	other
21672	.6364823402	R38635	ESTs	other
19918	.6303275831	H69787	ESTs	?
10511	.6297744492	AA024482	ESTs Highly	other
17721	.6057911016	AA136590	ESTs	?
42302	.6031859697	T96130	EST	SS,
26134	.6000619383	AA243763	ESTs	other
18766	.5621799008	F09497	ESTs	other
34492	.7.501590494	AA262439	ATL-derived P	other
270	.4512152125	D14822	EST - D14822	other
35975	.4177746986	AA412738	ESTs	other
29842	.4095809671	N21688	ESTs	?
35389	.3913043319	AA399555	ESTs	other
19979	.3868157166	H88477	ESTs	other
5793	.3865864025	X54942	CDC28 protei	other
19978	.7.380969715	H87770	EST - RC_H8	other
1280	.3691089318	HG4126-HT4	EST - HG4126	?
31571	.3676263454	N71250	ESTs	other
23765	.3541191734	T90443	ESTs Weakly	?

## FIGURE 12 (cont.)

35123	.3397933455	AA380927	EST	?
38252	.3341119467	AA489247	ESTs	other
38216	.3282021037	AA488861	ESTs	other
29418	.2489407005	H77915	EST - RC_H7	?
4834	.1980951054	U63541	Human mRNA	other
42504	.1913036522	W69803	ESTs	other
6111	.7.158000198	X71125	H.sapiens mR	TM
41773	.7.154479618	T03024	ESTs Weakly	other
9951	.1363626365	N71513	ESTs	other
28109	.0941968224	AA485212	ESTs	other
988	.0783044659	HG2160-HT2	EST - HG2160	?
29848	.0610668511	N22107	ESTs	other
30628	.0607950168	N50744	ESTs	other
22567	.0225726353	R77771	ESTs	TM
9347	.7.006323071	H03686	ESTs	TM
11696	.0026773298	AA252894	ESTs	other
40584	.0010096333	N34870	EST	?
193	.9767029188	D10923	PROBABLE G	TM
18305	.9740536051	AA214048	Collagen type	other
6078	.9699682397	X69141	FARNESYL-D	other
26741	.6.902658703	AA283198	ESTs	other
35069	.8992865685	AA358397	EST	?
23504	.8977135983	T71042	ESTs	other
299	.8824513029	D16815	Homo sapiens	other
40583	.8689903023	N34855	ESTs	other
31428	.8623762224	N68594	ESTs	other
6169	.8606959727	X75091	SET PROTEIN	other
39524	.8567355171	F01905	MALATE OXID	other
34578	.8430689439	AA280837	ESTs	other
38678	.6.837527995	AA599920	Small inducib	other
23936	.8251471804	T96930	ESTs	other
9326	.8181321394	D89377	Msh (Drosoph	other
19188	.8067351968	H11255	ESTs Highly	TM
18185	.7882148811	AA194983	Homo sapiens	other
27028	.6.757529124	AA399630	ESTs Weakly	other
41289	.7519531681	R37265	EST	other
34511	.7364448798	AA278298	EST - RC_AA	other
1566	.7056207716	J05614	EST - J05614	?
25675	.6692299748	AA129757	ESTs Highly	other
5814	.6584342828	X58088	CYTOCHROM	SS,
13861	.6236291607	AA470145	ESTs	other
29794	.6026313352	N20598	ESTs	other
39333	.5902382643	C20910	Cyclin B1	other
3770	.5835303599	U09609	Nuclear factor	other
31831	.5829933764	N89894	ESTs	?
33063	.5808125026	W53000	Homo sapiens	other
20326	.5640084836	N35583	ESTs Weakly	?
34384	.5535703492	AA252537	ESTs	other
25599	.5490481991	AA114091	Human (clone	other
39749	.5369363254	H14988	ESTs	other
42596	.5200567072	W85900	ESTs	?
39606	.5119482188	F10243	ESTs Weakly	?
14617	.5105504748	C14983	ESTs	other
27831	.6.45670814	AA456044	ESTs	?
34896	.4496517783	AA312551	EST	?
27360	.4434305006	AA425356	ESTs	other

## FIGURE 12 (cont.)

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20126	.4326810424	N22015	ESTs	TM
6663	.4324809977	Y00291	RETINOIC AC	TM
30692	.4196836207	N51563	ESTs	other
36472	.4189542265	AA428633	EST	?
9578	.3961788753	H87652	Homo sapiens	other
39670	.3818496158	H05626	ESTs	other
22697	.3652792447	R89218	ESTs	other
37308	.3647804993	AA451694	EST	TM
16101	.3517262802	AA002147	EST	?
20629	.3486854401	N59798	ESTs	other
36100	.3364146287	AA417740	ESTs	?
15488	.3252590241	W28097	Homo sapiens	other
36667	.3131273544	AA432136	ESTs	other
30766	.3115037924	N52627	EST - RC_N5	?
32882	.2745311453	W37683	ESTs	TM
18072	.2675797205	AA180448	EST	?
18231	.2652604863	AA199747	Human mRNA	other
38282	.2514165678	AA489814	EST	?
28125	.6.250317021	AA486073	ESTs	other
37464	.2484456382	AA454747	ESTs	?
36618	.1946328223	AA431478	ESTs	other
5082	.1931116815	U78524	Human Gu b1n	other
1441	.1777287039	J02963	Integrin alpha	other
42105	.6.14875944	T67710	ESTs	?
6061	.1394863141	X68314	Glutathione pe	SS,
32570	.1156028796	T30222	ESTs Weakly	TM
32504	.1019612076	T17063	EST	?
23335	.0977927504	T56804	EST	?
10867	.0970991075	AA088458	ESTs Weakly	other
30883	.0911993489	N56923	EST	?
14528	.0859008453	AA620295	ESTs	TM
29454	.0685955036	H81308	EST	?
6798	.0539173278	Y13153	Homo sapiens	TM
21248	.0525426545	R08871	ESTs	?
21940	.0499964138	R44538	ESTs	?
29066	.0455247653	F10927	Homo sapiens	other
18774	.0446826953	F09609	ESTs	?
36722	.0172343991	AA435512	ESTs	SS,
18062	.0034342969	AA179845	ESTs Modera	other
22989	.9992817406	T16305	ESTs	other
41745	.9905623896	R95895	ESTs	?
8787	.9894877658	AA504307	X-LINKED HE	other
20550	.5.984861795	N55013	ESTs	other
26470	.9417764101	AA262179	ESTs	other
16574	.9356497569	AA031926	EST	other
693	.9169537385	D80007	Human mRNA	other
4093	.5.914830973	U25182	Human antiox	TM
1192	.9086264407	HG3546-IT3	EST - HG3546	?
22956	.8954735623	T10248	ESTs	other
36723	.5.891606409	AA435524	EST	?
2114	.8844986595	L40384	EST - L40384	other
26872	.5.868238789	AA291137	ESTs	other
6602	.8663883018	X98266	EST - X98266	other
42701	.8594493433	Z38612	ESTs	other
28573	.5.84591116	C21118	ESTs	other
18290	.8189427595	AA211901	ESTs	other

FIGURE 12  
(cont.)

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732	.804391794	D83781	Human mRNA	other
5330	.801414561	U91327	EST - U91327	?
33503	.7990715189	W88720	EST	?
2553	.7797505864	M26167	Human platele	?
34705	.7658806254	AA286907	ESTs Weakly	other
42665	.7594091043	W93659	ESTs	other
38180	.7539310793	AA487495	EST - RC_AA	other
4244	.7476738809	U33286	Human chrom	other
32822	.7418957453	W16834	ESTs	TM
3977	.7245885557	U18991	Retinal pigme	?
24673	.7202366155	Z39301	ESTs	TM
6928	.7120261126	Z46629	SRY (sex-dete	other
38726	.7030796254	AA608733	ESTs	?
39290	.6892372058	C14573	Human mRNA	other
11405	.6818873796	AA232231	ESTs	other
22538	.6792006591	R73567	Homo sapiens	TM
40747	.6605393208	N56872	Homo sapiens	TM
31596	.6554024604	N72094	ESTs	other
6329	.6415652518	X82279	EST - X82279	?
31578	.6273323661	N71361	ESTs	other
33207	.6271818482	W70051	H.sapiens mR	other
2545	.6105860146	M25753	Cyclin B1	other
22580	.5988402647	R79156	ESTs	other
33592	.5935314516	W93127	ESTs	other
28843	.5734698755	D60252	ESTs	other
6160	.5689050619	X74794	CDC21 HOMO	other
37987	.5561345667	AA479666	ESTs	other
42515	.5217868611	W72116	Homo sapiens	other
4732	.5130668527	U58522	Human huntin	other
3299	.5099850678	M95623	Hydroxymethy	?
28320	.5473406981	AA599574	ESTs	?
746	.5471260899	D84454	Human mRNA	TM
39373	.4635804954	C21517	ESTs	other
3117	.4398413537	M81182	Peroxisomal m	other
21257	.4343612441	R09196	ESTs Modera	other
31487	.4318648859	N69507	ESTs	other
28954	.4137130511	F03153	ESTs	other
38928	.5389782721	AA609595	ESTs	other
29903	.3722320622	N23366	EST	?
30925	.3437432315	N58295	ESTs Weakly	?
19091	.3344615669	H07864	ESTs	TM
28209	.3138951918	AA491250	ESTs	other
9470	.3118897984	H46617	EST - H46617	other
9435	.3070056656	H30201	EST - H30201	?
28552	.2954432572	C20914	ESTs	other
27411	.2940164267	AA428137	ESTs	other
30615	.2924125264	N50556	ESTs	other
28313	.2657977167	AA599309	ESTs	TM
39321	.2649035384	C20632	ESTs	?
29934	.2531047395	N24194	ESTs	other
1094	.2496703122	HG2846-HT2	EST - HG2846	?
39578	.2481126384	F08925	ESTs	TM
11232	.2466798424	AA186804	ESTs Weakly	other
2466	.2426349328	M21539	Human small	other
26843	.2387758661	AA287450	ESTs	?
40331	.2353385567	H97562	ESTs Weakly	other

**FIGURE 12**  
**(cont.)**



8035	5.205798365	AA305116	EST - AA3051	other
29793	.1955425722	N20593	ESTs Weakly	other
34109	.1481590107	AA210722	EST	?
26408	.1432577257	AA258177	ESTs Weakly	other
19263	.1427029807	H15054	ESTs	TM
24596	.1416089352	Z38810	ESTs	other
28589	.1365059753	C21245	H.sapiens mR	other
5684	.1121931412	X17098	Pregnancy-sp	other
30710	.1079347344	N51761	EST	?
35765	.0973514948	AA406167	EST	?
26360	.0863127861	AA256460	ESTs	?
2351	.0849612092	M15796	Proliferating c	?
30262	.0836877534	N35065	Homo sapiens	other
41792	.0737512485	T03886	ESTs	?
36710	.0703839864	AA434411	ESTs	other
39090	.0546885407	AA620628	ESTs	TM
42185	.0539926381	T79951	ESTs	?
18745	.0460321557	F09134	ESTs	other
35746	.0396841996	AA406063	ESTs	other
35356	.0354809581	AA399053	EST	?
36769	.0312706878	AA435750	EST	?
36900	.0279911548	AA436866	H.sapiens mR	other
27595	.0244757301	AA443328	ESTs	TM
16290	.0056611904	AA016145	ESTs	?
27117	.0016146599	AA405098	ESTs Weakly	other
4304	.9951954397	U36764	Eukaryotic tra	other
33458	.9907402071	W86835	Homo sapiens	other
26693	.9800090679	AA282120	EST	?
12669	.9758138651	AA417030	Homo sapiens	other
29701	.9708526387	H97970	EST	?
20480	.9557253636	N52168	ESTs	TM
8720	.9439110602	AA481218	EST - AA4812	other
34828	.9431269475	AA292436	Homo sapiens	SS, TM
14985	4.941621032	U15128	Human beta-	?
16115	.9377553522	AA004420	ESTs	?
42506	.9348587118	W70074	EST	other
34761	.9316837445	AA287833	ESTs	other
11870	.9281056201	AA262587	ESTs	TM
23211	.9258391854	T40889	ESTs	other
40611	.9160502275	N39138	Homo sapiens	other
42611	.9128605354	W87006	Homo sapiens	other
39652	.9045174605	H03099	ESTs	other
17581	4.889674751	AA129395	EST	?
37239	.8704375389	AA449121	ESTs	?
18712	.8703618781	F04677	ESTs	other
30709	.8611171953	N51752	ESTs Weakly	other
34179	.8503613948	AA227903	ESTs Highly	other
21433	4.825670988	R22183	EST	?
39731	.8186142741	H11760	ESTs	other
31295	.8116614607	N66653	ESTs	other
24647	4.804163055	Z39108	EST	?
31292	.8008871817	N66615	ESTs	other
1285	.7997542393	HG4157-HT4	EST - HG4157	?
1106	.7932425858	HG2981-HT3	EST - HG2981	?
18212	.7912262565	AA196506	ESTs	other
34367	4.782207045	AA251758	Homo sapiens	other

## FIGURE 12 (cont.)

34802	.7797760205	AA291468	ESTs	TM
34762	.7775301546	AA287834	ESTs	other
11595	.7696612848	AA242819	ESTs	other
8295	.7639839111	AA405082	ESTs	?
17622	4.758635576	AA131584	ESTs Weakly	other
35781	.7572463523	AA406335	ESTs	other
34754	.7483874972	AA287642	Human mRNA	other
23237	.7444854356	T47291	EST	?
37667	.7280445357	AA460318	ESTs Highly	other
11568	.7257189978	AA236786	ESTs	other
38622	.7190695733	AA598967	ESTs	?
5137	.7057359474	U79296	Dihydrolipoam	other
25038	.7002244728	AA010065	CDC28 protei	other
19288	.7000147312	H16567	ESTs	other
32503	.6979488292	T17045	Collagen type	other
3278	.6953739298	M94055	SODIUM CHA	TM
9696	.6942061018	L38961	Integral trans	TM
35400	.6901390898	AA399591	Homo sapiens	other
35246	.6862691303	AA398367	EST Weakly s	?
36387	.6822499271	AA426270	ESTs	other
21509	.6730072542	R27314	ESTs	other
31381	.6729672124	N67889	ESTs	other
26723	.6727894925	AA282781	ESTs Highly	other
36326	.6703621086	AA425151	Human GAP S	other
17409	.6688418667	AA113136	EST - RC AA	other
4908	.6552339935	U67156	Human mitoge	other
30594	.6496238328	N49967	ESTs	other
38286	4.64639735	AA489847	ESTs Weakly	?
13073	.6426509459	AA433950	ESTs	other
40435	.6240181066	N21614	Homo sapiens	other
14474	.6228694379	AA609427	ESTs Modera	other
38213	4.615309907	AA488847	ESTs Weakly	?
5312	4.606644198	U90716	Human cell su	SS, TM
24225	.6041550358	W70326	ESTs	?
35588	.5868982366	AA401750	EST	?
29739	.5863199051	H99626	EST	?
7203	.5792992577	AA053096	EST - AA0530	other
2157	.5772055868	L41939	Homo sapiens	SS, TM
32086	.5661024279	R11510	ESTs	?
8085	.5648114738	AA314779	ESTs Weakly	SS,
224	.5622018989	D13633	Human mRNA	other
34006	.5609980241	AA188761	DNA polymera	other
33656	.5557384389	W95477	ESTs	other
34065	.5537335124	AA195517	ESTs Weakly	TM
6028	.5357922097	X66503	Adenylosuccin	other
4166	.5032930671	U29463	Cytochrome B	?
40262	.5024727522	H93562	ESTs	TM
22687	.5018672549	R88209	ESTs	TM
41069	.4977510482	N93969	H.sapiens mR	SS,
8264	.4793100575	AA401334	ESTs	other
27588	.4720172971	AA443187	ESTs	other
35882	.4717597552	AA412047	ESTs	?
34479	.4655191911	AA262080	Human burnet	TM
15921	.4548516436	Y12065	Homo sapiens	?
11279	.4380038671	AA195399	ESTs	other
39222	.4367650786	AA621348	ESTs Highly	other

## FIGURE 12 (cont.)

34428	.4364736766	AA256526	ESTs	other
8771	4.432067373	AA491188	ESTs	other
22193	.4189610024	R53891	Homo sapiens	other
7898	.4066170674	AA263032	ESTs	other
19902	.3886145805	H66736	ESTs	other
9276	.3868095209	D82374	ESTs	other
10716	.3794529068	AA053319	ESTs	TM
13193	.3751913512	AA442763	ESTs Highly	other
5690	.3723059417	X17620	NUCLEOSIDE	other
35102	4.37147138	AA371509	EST - RC_AA	TM
17983	.3612985467	AA169226	ESTs	other
24962	.3497206925	AFFX-HUMTE	AFFX-HUMTE	?
31680	.3416539669	N74438	ESTs	other
27168	4.330306894	AA410258	ESTs	other
28731	.3231846659	D20981	EST	?
28348	.3212284906	AA608752	ESTs	other
16335	.3019961487	AA018587	ESTs Weakly	?
33036	.2915644973	W48580	ESTs Weakly	other
30180	.2897721925	N33144	ESTs	other
35591	.2895541242	AA401758	ESTs Weakly	SS,
25340	.2721717135	AA054554	EST	?
28106	.2659103748	AA485084	ESTs	other
38690	.2649184307	AA600121	ESTs	other
20203	.2626499431	N26855	ESTs Modera	other
10251	.2608760694	R76185	ESTs Weakly	SS,
12684	.2604192389	AA417558	ESTs	SS,
31636	.2509469427	N73680	Natural resista	TM
20769	.2479765348	N67277	ESTs	other
1572	.2353281083	K01884	EST - K01884	?
10923	.2292322072	AA116036	ESTs	other
34380	.2283792392	AA252414	ESTs	other
10132	.2222816115	R35733	EST - R35733	other
16629	.2161752115	AA036811	ESTs	other
25146	.1969683794	AA026356	ESTs	?
28730	.1965943098	D20959	ESTs Modera	other
10200	.1874912391	R64521	ESTs	other
38695	.1545794663	AA600176	ESTs	other
31365	4.150549979	N67550	ESTs	other
42379	.1496120668	W37999	ESTs	other
28050	.1428703354	AA479139	Acid phosphat	other
2620	.1386565707	M29474	Human recom	?
8927	.1340593744	AF008442	Homo sapiens	other
13379	.1269549188	AA449741	ESTs Weakly	other
5134	.1218251808	U79293	Human clone	other
2626	4.1213948	M29581	Zinc finger pro	other
38005	.1160483668	AA479969	ESTs	other
36575	.1127196584	AA431085	EST	?
18296	.1121837207	AA213620	ESTs Weakly	?
29531	.1111459313	H88953	EST - RC_H8	TM
143	.1095880506	AFFX-HUMTE	AFFX-HUMTE	?
10970	.0967613396	AA129390	ESTs	other
25836	.0952825397	AA152305	Interferon (gam	SS,
19735	.0937927853	H53038	EST	?
40711	.0909709431	N53564	ESTs	other
4149	.0901471427	U28386	RAG (recomb	TM
5767	.0862784557	X53793	MULTIFUNCT	other

**FIGURE 12**  
**(cont.)**

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SS, other  
SS, other  
SS, other  
? other  
other  
TM  
other  
other  
other  
TM  
other  
? TM  
other  
other  
other  
? other  
? TM  
other  
? other  
other  
other  
other  
? other  
other  
TM  
other  
other  
other  
other  
other  
? other  
other  
other  
other  
? other  
? S,TM  
other  
other

**FIGURE 12**  
**(cont.)**

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12752	.7671137403	AA421250	ESTs	other
42463	.7601033106	W60180	ESTs	other
10614	.7581669016	AA037357	ESTs	?
867	.7459337969	D87716	Human mRNA	other
7608	.7336047135	AA180967	ESTs	other
31795	.732738742	N80703	ESTs	other
35377	.7273784603	AA399453	EST - RC_AA	?
22828	.7243928524	R98192	ESTs	other
25240	.7243198336	AA039713	ESTs	other
11008	.7197361366	AA134289	ESTs Weakly	?
4341	.7162349944	U38545	Human ARF-a	other
28833	.7147818393	D59787	EST - RC_DS	?
3750	.7121007154	U09279	Collagen type	SS,
17483	.6943413512	AA122147	ESTs	TM
16854	.6915208471	AA055552	ESTs Weakly	TM
3709	.6891658774	U07550	Heat shock 10	other
1608	.6652978422	L00205	KERATIN TYP	?
24577	.6617721053	Z38727	Homo sapiens	TM
31032	.6570916386	N62508	ESTs	other
4951	.6536195433	U69546	Human RNA b	other
37660	.6523275307	AA460225	ESTs	other
20418	.6495357091	N49209	ESTs	other
27995	.6485167436	AA470155	Homo sapiens	?
7971	.6434397185	AA287423	ESTs	other
27606	.6430303453	AA443793	ESTs	other
24677	.6427250633	Z39338	ESTs Highly	other
11070	.6406198277	AA148521	ESTs Weakly	TM
9328	.6356048599	D89618	Homo sapiens	other
36826	.634689802	AA435996	ESTs	other
17678	.6300045795	AA134275	Human HIV1	other
36209	.6274694477	AA421266	ESTs Weakly	other
34120	.6258090412	AA211615	EST	?
38152	.6246442016	AA486737	H.sapiens mR	TM
38463	.6184693266	AA504491	ESTs Weakly	TM
20064	.6183699976	H98653	ESTs	TM
31256	.5992620732	N66152	EST	?
9713	.5985228843	L44338	Homo sapiens	other
28622	.5768056147	D11837	ESTs	?
38057	.5736105703	AA481549	EST - RC_AA	other
28763	.5688723791	D45568	EST	?
16996	.5680705709	AA069038	EST - RC_AA	TM
28628	.5604144617	D11888	ESTs Modera	?
25804	.5442954572	AA148885	ESTs	?
2492	.5423964239	M22898	Tumor protein	?
14904	.5411970737	T83389	ESTs Highly	other
25265	.5347588502	AA043765	H.sapiens RY	other
13606	.5327912417	AA456437	ESTs Weakly	other
42307	.5318436465	T96595	EST - RC_T96	TM
1544	.526202414	J05068	TRANSCOB	SS,

**FIGURE 12**  
**(cont.)**

Code	PRIMEKEY	of tumor	Accession	Complete Title
CZA8	111929	3.7	R40057	prominin (mouse)-like 1
BCX2	128790	4.0	AA291725	secreted frizzled-related protein 4
CBC2	101809	5.7	M86849	Homo sapiens connexin 26 (GJB2) mRNA, complete cds
CBC1	100365	4.8	D78611	mesoderm specific transcript (mouse) homolog
CBC3	102618	2.5	U65932	extracellular matrix protein 1
	134804	6.3	L37036	small inducible cytokine subfamily B (Cys-X-Cys); member 5 (epithelial-derived neutrophil-activating peptide 78)
	104209	2.1	AB000221	small inducible cytokine subfamily A (Cys-Cys); member 18; pulmonary and activation-regulated
CJA8	115697	8.1	AA411502	ESTs; Weakly similar to airway trypsin-like protease [H.sapiens]
	124315	5.4	H94892	v-rat simian leukemia viral oncogene homolog A (ras related)
	109415	4.3	AA227219	Homo sapiens CAGF9 mRNA; partial cds
	103613	5.1	Z46629	SRY (sex-determining region Y)-box 9 (campomelic dysplasia; autosomal sex-reversal)
	109166	6.2	AA179845	RAB6 interacting; kinesin-like (rakbesin6)
CJA9	116176	5.7	AA463725	ESTs; Weakly similar to KIAA0226 [H.sapiens]
CGA7	115522	8.1	AA331393	ESTs
	125852	5.7	H09290	ESTs; Weakly similar to unknown [H.sapiens]
BCN5	112244	3.1	R51309	ESTs
CQA1	132592	5.6	AA129390	ESTs
BCN7	117280	5.4	N22107	ESTs; Moderately similar to !!!! ALU SUBFAMILY SC WARNING ENTRY !!!! [H.sapiens]
	102663	4.8	U70322	karyopherin (importin) beta 2
CQA2	104660	6.0	AA007160	ESTs
	113702	2.4	T97307	ESTs; Moderately similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]
	100154	6.0	D14657	KIAA0101 gene product
	102260	3.7	U28386	Human nuclear localization sequence receptor hSRP1alpha mRNA, complete cds
	101809	5.7	M86849	Homo sapiens connexin 26 (GJB2) mRNA, complete cds
	133272	3.2	AA465016	ESTs; Highly similar to serine protease homolog
	100365	4.8	D78611	mesoderm specific transcript (mouse) homolog
	126819	4.7	AA305536	EST176522 Colon carcinoma (Caco-2) cell line II Homo sapiens cDNA 5' end, mRNA sequence.
	132543	4.6	AA417152	ESTs; Highly similar to protein regulating cytokinesis 1 [H.sapiens]
	103023	5.5	X53793	multifunctional polypeptide similar to SAICAR synthetase and AIR carboxylase
	132109	3.1	AA599801	ESTs
	104037	3.5	AA372630	differentially expressed in hematopoietic lineages
	104978	3.5	AA088458	ESTs; Weakly similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]
	108695	3.0	AA121316	ESTs
	107248	3.8	D59894	ESTs
	132902	3.4	AA490969	ESTs
	120104	4.0	W95477	ESTs
	128790	4.0	AA291725	secreted frizzled-related protein 4
	101923	3.8	S75256	HNL=neutrophil lipocalin [human, ovarian cancer cell line OC6, mRNA Partial, 534 nt]
	119943	3.4	W86835	copine III
	130648	3.9	AA075427	ESTs
	132358	3.5	X80486	H4 histone family; member G
	106286	3.2	AA434441	frizzled (Drosophila) homolog 7
	117557	2.3	N33920	diubiquitin
	129691	3.3	X06700	collagen; type III; alpha 1 (Ehlers-Danlos syndrome type IV; autosomal dominant)
	114767	4.5	AA148885	minichromosome maintenance deficient (S. cerevisiae) 4
	100335	3.8	D63391	platelet-activating factor acetylhydrolase; Isoform 1b; gamma subunit (29kD)
	134989	3.5	AA236324	ESTs; Weakly similar to !!!! ALU CLASS A WARNING ENTRY !!!! [H.sapiens]
	110009	3.4	H10933	ESTs
	124059	4.0	F13673	ESTs
	104755	2.2	AA024482	ESTs; Weakly similar to epidermal type I keratin [H.sapiens]
	107151	3.4	AA621169	ESTs
	132669	2.9	AA188378	ESTs; Weakly similar to 60S RIBOSOMAL PROTEIN L22 [H.sapiens]
	104394	5.5	H46617	yp19h1.1 Soares breast 3NbHb1 Homo sapiens cDNA clone IMAGE:187921 5', mRNA sequence
	117667	2.5	N39214	ser-Thr protein kinase related to the myotonic dystrophy protein kinase
	104954	3.3	AA074514	ESTs; Moderately similar to (define not available 4753768) [H.sapiens]
	132994	3.7	AA505133	ESTs
	102681	3.7	U72761	karyopherin (importin) beta 3
	103989	2.2	AA314779	ESTs; Weakly similar to LITHOSTATHINE 1 BETA PRECURSOR [H.sapiens]
	132183	2.5	L19183	Human MAC30 mRNA; 3' end

FIGURE 13A

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118695	3.0	N71781	ESTs
109552	3.4	HG2167-HT22	Protein Kinase H131, Camp-Dependent
120471	2.5	AA251829	ESTs; Moderately similar to (define not available 4680697) [H.sapiens]
126547	4.2	U47732	transmembrane 4 superfamily member 3
106067	3.3	AA417067	ESTs
125103	4.0	T95333	ESTs; Weakly similar to Strabismus [D.melanogaster]
135243	3.4	AA215333	ESTs
121457	2.5	AA411448	ESTs; Moderately similar to alternatively spliced product using exon 13A [H.sapiens]
131216	2.7	D31058	ESTs
112971	2.4	T17185	ESTs
111179	2.1	N67239	ESTs
123533	2.3	AA608751	ESTs; Moderately similar to !!!! ALU SUBFAMILY SC WARNING ENTRY !!!! [H.sapiens]
105175	2.4	AA186804	ESTs; Weakly similar to unknown [S.cerevisiae]
105156	2.7	AA172372	ESTs; Moderately similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]
111223	2.5	N68921	ESTs; Weakly similar to neogenin [H.sapiens]
132180	2.7	AA405569	fibroblast activation protein; alpha
106400	2.1	AA447621	ESTs
129260	3.1	AA093834	ESTs; Highly similar to (define not available 4679014) [H.sapiens]
115291	3.9	AA279843	ESTs
128628	2.1	C14037	ESTs; Weakly similar to Yel007c-ap [S.cerevisiae]
116399	2.7	AA599729	Homo sapiens homeobox protein A10 (HOXA10) gene; complete cds
130987	3.5	R45698	ESTs
105082	2.6	AA143763	ESTs; Weakly similar to Similarity to S. Pombe BEM1/BUD5 suppressor [C.elegans]
103453	3.2	X98595	H.sapiens mRNA for SMT38 protein
115947	2.6	AA443793	ESTs
105012	2.8	AA116036	ESTs; Highly similar to (define not available 4589929) [H.sapiens]
105507	3.2	AA256678	ESTs; Moderately similar to (define not available 4106061) [H.sapiens]
130800	2.6	AA223386	ESTs; Weakly similar to katanin p80 subunit [H.sapiens]
116461	3.4	AA621557	ESTs; Moderately similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]
129945	2.5	AA232104	ESTs; Highly similar to (define not available 4929579) [H.sapiens]
100864	2.1	HG4297-HT45	Transcriptional Coactivator Pc4
128131	2.3	A1283162	claudin 3
131564	2.8	AA491465	ESTs
100279	3.1	D42084	Human mRNA for KIAA0094 gene; partial cds
134405	1.8	J04177	collagen; type XI; alpha 1
130287	2.6	AA113149	tumor suppressing subtransferable candidate 3
108828	2.1	AA131584	ESTs; Weakly similar to coded for by C. elegans cDNA cm16f6 [C.elegans]
131289	2.2	AA485697	ESTs
109141	4.2	AA176428	ESTs
119307	2.5	T32108	ESTs
134319	2.1	AA129547	ESTs; Moderately similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]
133458	5.0	M18728	non-specific cross reacting antigen
116732	2.3	F13779	ESTs; Weakly similar to !!!! ALU SUBFAMILY J WARNING ENTRY !!!! [H.sapiens]
CGA8 115239	3.0	AA278650	ESTs

## FIGURE 13B

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Code	PRIMEKEY	d of tumor ov	Accession	Complete Title
CZA8	111929	3.7	R40057	prominin (mouse)-like 1
BCX2	128790	4.0	AA291725	secreted frizzled-related protein 4
CBC2	101809	5.7	M86849	Homo sapiens connexin 26 (GJB2) mRNA, complete cds
CBC1	100365	4.8	D78611	mesoderm specific transcript (mouse) homolog
CBC3	102618	2.5	U65932	extracellular matrix protein 1
CJA8	115697	8.1	AA411502	ESTs; Weakly similar to airway trypsin-like protease [H.sapiens]
CJA9	116176	5.7	AA463725	ESTs; Weakly similar to KIAA0226 [H.sapiens]
CGA7	115522	8.1	AA331393	ESTs
BCN5	112244	3.1	R51309	ESTs (now Sulfatase by in-house sequencing) -
CQA1	132592	5.6	AA129390	ESTs
BCN7	117280	5.4	N22107	ESTs; Moderately similar to !!!! ALU SUBFAMILY 5C WARNING ENTRY !!!! [H.sapiens]
CQA2	104660	6.0	AA007160	ESTs

## FIGURE 14

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## FIGURE 15

ATGACCATGATTACGCCAAGCTTGGCAGGAGGGAGACAGCCACTTGGCCATGTACCCAAAACAAGGAGAAGGTGCAAGAC  
TGTCCGTGTGGACCCCTGACTCAGCAGCAATCATTAGAGATAAAAAATAAGTAATCCCCTGAATTCCAGAATCATGAAA  
AGCAGGAAAGCCAGGATCTCAGAGCTACTGCAAAAGTTCCTTCTCCACCAGACGAGCACCAGAAGCTGAGAATGCTGT  
TCCTCAGGTAACAGAGATTCAAAGGTACCTTCAGAAGGAAAGAAATCTCTTACACAGATGAGTCATCCAAACCTGGAAA  
AAATAAAAGAACTGCAATCACTACTCCAACTTTAAGAAGCTTCATGAAGCTCATTTAAGGAAATGGAGTCCATTGATC  
AATATATTGAGAGAAAAAGAAACATTTGAAGAACAATTCATGAATGAAGTGAAGCAGCAGCCCATCAATAAGGGA  
GGGGTCAGGACTCCAGTACCTCCAAGAGGAAGACTCTCTGTGGCTTCTACTCCCATCAGCCAACGAGCTCGCAAGGCCG  
GTCTTGTGGCCCTGCAAGTCAGAGTACCTTGGGTCTGAAGGGGTCACTCAAGCGCTCTGCTATCTCTGCAGCTAAAACGG  
GTGTCAGGTTTTCAGCTGCTACTAAAGATAATGAGCATAAGCGTTCCTGACCAAGACTCCAGCCAGAAAGTCTGCACAT  
GTGACCGTGTCTGGGGGCACCCAAAAAGGCGAGGCTGTGCTTGGGACACACAAATTAAAGACCATCACGGGGAATTCTGC  
TGCTGTATTACCCCATTCAGTTGACAACTGAGGCAACGCAGACTCCAGTCTCCAATAAGAAAACAGTGTGTTGATCTTA  
AAGCAAGTTTGTCTCGTCCCTCAACTATGAACCACACAAAGGAAAGCTAAAACCATGGGGGCAATCTAAAGAAAATAAT  
TATCTAAATCAACATGTCAACAGAATTAACCTTACAAGAAAACCTTACAAACAACCCCATCTCCAGACAAAGGAAGAGCA  
ACGGAAGAAACGCGAGCAAGAACGAAAGGAGAAGAAAGCAAAGGTTTTGGGAATGCGAAGGGGCCTCATTTTGGCTGAAG  
ATTTA

FIGURE 16

MTMITPSLARGRQPLGHVTKTRRRCKTVRVDPDSQQNHSEIKISNPTEFQNHKEQESQDLRATAKVPSPDEHQEAENAV  
SSGNRDSKVPSEGKKSlytDESSKPGKNKRTAITPNFKKLHĒAHFKEMESIDQYIERKKKHFEHNSMNELKQQPINKG  
GVRTVPVPPRGRLSVASTPISQRRSQGRSCGPASQSTLGLKGS LKRS AI SAAKTGVRFSAATKONEHKRSLTKT PARKSAH  
VTVSGGTQKGEAVLGTHKLKTI TGN SAAVITPFFKLTTEATQTPVSNKKPVFDLKASLSRPLNYEPHKGKLPWGQSKENN  
YLNQHVNRINFYKKT YKQPHLQTKEEQRKKREQERKEKKAKVLGMRRGLILAED

## FIGURE 17

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Amino-CKVLG MRRGL ILAED-COOH

**FIGURE 18**

Acetyl-KQPHL QTKEE QRKKC-Amide

**FIGURE 19**

```
human_CAA2 -----KKHFEEHNSMNELKQPIKGGVVRTPVPPRGRLSVASTPISQRRS
mouse_CAA2 ARFKKMESIDEYIMRKKKKHLKEHSSLNELKLDKK---GIVTPVPFGRSLVPCTPARQQCP
          ***::**.*:***** : * : *****..* * :
human_CAA2 QGRSCGPASQSTLGLKGS�KRS AISAAKTGVRFSAATKDNEHKRSLTKTPARKSAHVTVS
mouse_CAA2 QG-----H--S-ATKMNVRFSAATKDNEHKCSLTKTPARKSPHVTAP
          ** : * : ***** ..* * :
human_CAA2 GGTQKGEAVLGTHKLKTIITGNSAAVITPFKLTTTEATQTPVSNKKPVFDLKASLSRPLNYE
mouse_CAA2 GSASKGQAVFRTPKSKATERTSIAVITPFKLMTTEATQTPSSSKKPVFDLKASLSRPLNYK
          *.:**::*: * * *: . * ***** ..* * :
human_CAA2 PHKGKLPWGGQSKENNYLNQHVNRINFYKKTYKQPHLQTKEEQQRKKREQERKEKKAKVLG
mouse_CAA2 PHKGKLPWGGQAKENNSLNERVSRVTFHRKTYKQPHLQTREERWKRQEQRKEKKEKLE
          *****:**** **::*.:*.:*****:***: *.:***** *:
human_CAA2 MRRGLILAED-
mouse_CAA2 ARRNLGVTKAQ
          **.* :::
```

## FIGURE 20

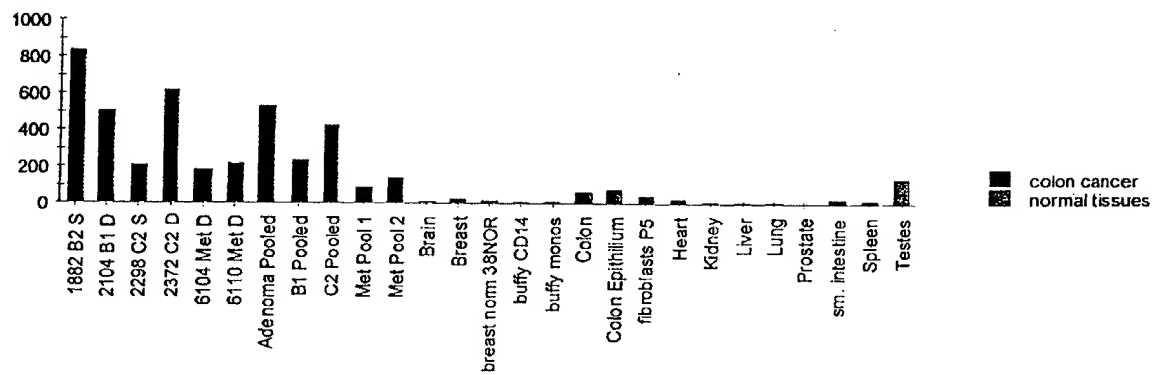


FIGURE 21

## FIGURE 22

GGTGGCCTCTGTGGCCGTCCAGGCTAGCGGCGGCCCGCAGGCGGCGGGAGAAAGACTCTCTACCTGGTCTTGC GGCTG  
TGGCCACCGCCCGCCAGGGGTGTGGAGGGCGTGCTGCCGAGACGTCCGCCGGGCTCTGCAGTTCGCCCGGGGTCTGGGC  
AGCTATGGAGCCGCGGCCACGGCGCCCTCTCCGGCGCCCCCGGACTGGCCGGGGTCTGGGGAGACGCCCTCAGCCGCTG  
CGCTGGCCCGCAGCCAGGTGGAACCTGCCCGGCACGGCTGTGCCCTCGGTGCCGAGGATGCTGCCGCCGCGAGCCGGGAC  
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CGGCTGGTGTCTGGGGCGGGGGCCAAAGCAGACCCCCCGGACGGGGAAGCCAGCGGCGAGAGCGAGCCAGCTAAAGGCAGC  
GAGGAAGCCAGGGCCGCTTCCGCGTGAACCTCGTGACCCAGCTGCCCTCTCGTCCGCTGAAGACAGCCTGTGAGATGC  
TGCCGGGTCGGAGTCGACGGGCCCAACGTGAGCTTCCAGAACCGCGGGGACACGGTGCTGAGCGAGGGCAGCAGCTGCG  
ACTCCGGCGGCGCGCGCGGCGGAGTGGGCACCACCAGCACTACTATATGATACCCACACCAACACCTACTACCTGCCGACC  
TTCGGCCACAACACCATGGACGCTGTGCCAGGATCGATCACTACCGGCACACAGCCGCGCAGCTGGGGCAGAAAGCTGCT  
CCGGCCTAGCCTGGCGGAGCTCCACGACGAGCTGGAAAAGGAACCTTTTGAGGATGGCTTTGCAAATGGGGAAGAAAGTA  
CTCAACACAGAGATGCTGTGGTCACGTATACTGCAGAAAGTAAGGAGTCTGTAAGTTTGGCTGGATCAAGGGGTGTATTA  
GTACGTTGTATGTTAAACATTTGGGGTGTGATGCTTTTCATTAGATTGTGATGGATTGTGGGTCAAGCTGGAATAGGTCT  
ATCAGTCCCTGTAATAATGATGGCCACTGTTGTGACAACATACACAGGATGTGCTACTTCAGCAATAGCAACTAATGGAT  
TTGTAAGAGGAGGAGGAGCATATTTATTAAATATCTAGAAGCTTAGGGCCAGAAATTTGGTGGTGAATTTGGTCTAATCTTC  
GCCTTTGCCAACGCTGTGTCAGTTGCTATGTATGTGGTTGGATTGTCAGAAACCGTGGTGGAGTTGCTTAAGGAACATTC  
CATACTTATGATAGATGAAATCAATGATATCCGAATATTGGAGCCATACAGTCGTGATTCTTTTAGGTATCTCAGTAG  
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ACATTTATCCCACTGGAGAGCAAGAAGCCAAAGGGTTTGTGGTTATAAATCTGAAATATTTAATGAGAACTTTGGGCC  
CGATTTTTCGAGAGGAAGAGACTTTCTTTCTGTATTGTCATCTTTTCTCTGCTGCAACTGGTATTCTGGCTGGAGCAA  
ATATCTCAGGTGATCTTGCAGATCCTCAGTCAGCCATACCCAAAGGAACACTCCTAGCCATTTAATTACTACATTGGTT  
TACGTAGGAATTGCAGTATCTGTAGGTTCTTGTGTTGTCGAGATGCCACTGGAACGTTAATGACACTATCGTAACAGA  
GCTAACAACTGTACTTCTGCAGCCTGCAAAATTAACCTTTGATTTCATCTTTGTAAGCAGTCTTGTTCCTATGGCC  
TAATGAACAACTTCCAGGTAATGATGTTGTCAGGATTTACACCATAATTTCTGAGGTATATTTCAGGCCACTCTT  
TCTTCAGCATTAGCATCCCTAGTGAGTGCTCCCAAAATATTTCAGGCTCTATGTAAGGACAACATCTACCCAGCTTTCCA  
GATGTTTGTCTAAAGGTTATGGGAAAAATATGAACCTCTCGTGGCTACATCTTAACATTCTTAATTGCACTTGGATTCA  
TCTTAATTGCTGAACTGAATGTTATTGCACCAATTATCTCAAACTTCTCTCTGATCATATGCAATTGATCAATTTTCA  
GTATTCATGTCATCACTTGCAAAATCTCCAGGATGGCGTCTGCAATCAAACTACAACTATGTTGGATACACTTCTTGG  
AGCAATTTCTTGTGTCATAGTAATGTTGCTCATTAACCTGGTGGGCTGCATTGCTAACATATGTGATAGTCTTGGGCTGT  
ATATTTATGTTACCTACAAAAAACAGATGTGAATTTGGGGATCCTCTACACAAGCCCTGACTTACCTGAATGCACTGCAG  
CATTCAATTCTGTCCTTCTGAGTGGAGACCACTGTAAGGCTTTAGGCCACAGTGTCTTGTATGACAGGTGCTCCAAA  
CTCAGTCCAGCTTTACTTTCATCTTGTTCATGATTTACAAAAAATGTTGGTTGATGATCTGTGGCCATGTACATATGG  
GTCCTCGAAGACAAGCCATGAAAGAGATGTCATCGATCAAGCCAAATATCAGCGATGGCTTATTAAGAACAAAATGAAG  
GCATTTTATGCTCCAGTACATGCAGATGACTTGAGAGAAGGTGCACAGTATTTGATGCAGGCTGCTGGTCTTGTGCTGT  
GAAGCCAAACACACTTGTCTTGGATTAAAGAAAGATTGGTTGCAAGCAGATATGAGGGATGTGGATATGTATATAAAT  
TATTTTCATGATGCTTTTGACATACAAATATGGAGTAGTGGTTATTCGCCTAAAAGAGGTCTGGATATATCTCATCTTCAA  
GGACAAGAAGAAATATTGTATCACAAGAGAAATCTCCTGGCACCAAGGATGTGGTAGTAAGTGTGGAATATAGTAAAAA  
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ACCTTACCTTCTGACGACCAAGAAAAAATGGAAGACTGTAAGATCAGAGTATTCATTGGTGGAAAGATAAACAGAAATAG  
ACCATGACCGGAGAGCGATGGCTACTTTGCTTAGCAAGTTCCGGATAGACTTTTCTGATATCATGGTTCTAGGAGATATC  
AATACCAAAACCAAGAAAGAAATATATAGCTTTTGGAGAAATCAATTGAGCCATACAGACTTCATGAAGATGATAAAGA  
GCAAGATATTGCAGATAAAATGAAAGAGATGAACCATGGCGAATAACAGATAATGAGCTTGAACCTTTATAAGACCAAGA  
CATACCGGCAGATCAGGTTAAATGAGTTATTAAGGAACATTCAAGCACAGCTAATATTATTGTATGATGCTCCAGTT  
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TTCATTAATTGAAAGCACACAGGAAAGCTTGTCTCCATTGATAACGTGTATGGAGACTTCGGTTTTAGTCAATTCATAT  
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AGCGTGTTAACTTTTGG

[illegible]



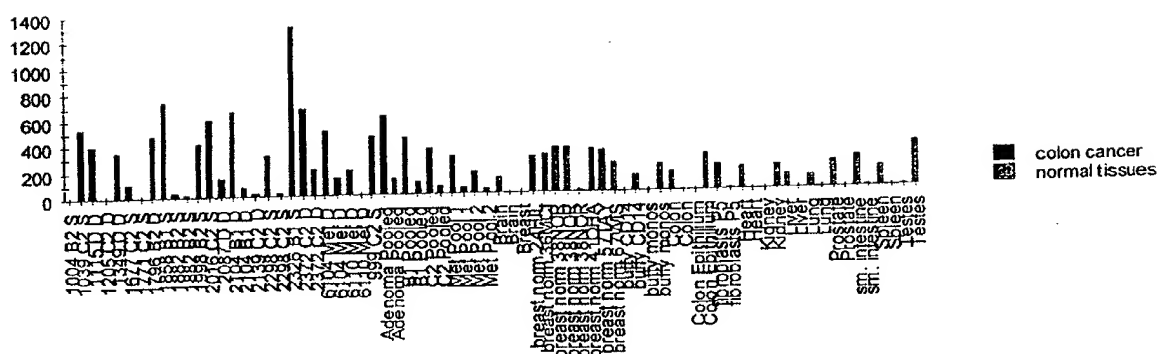
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FQVDLVSENAGRAAAAAAAAAAAAAAAAAAGAGAGAKQTPADGEASGESEPAKGSSEAKGRFRVNFVDPAASSSAEDSLSDAA  
GVGVDGPNVSFQNGGDTVLSEGSLSHSGGGGSGHHQHYYDTHNTYTLRTFGHNTMDAVPRIDHYRHTAAQLGEKLLR  
PSLAELHDELEKEPFEDGFANGEESTPTRDAVVITYAESKGVVKFGWIKGVLVRCMLNIWGVMLFIRLSWIVGOAGIGLS  
VLVIMMATVVTITGLSTSAIATNGFVRGGGAYYLISRLGPEFGGAIGLIFAFANAVAVAMYVVGFAETVVVELLKEHSI  
LMIDEINDIRIIGAITTVVILLGISVAGMEWEAKAOIVLLVILLAIIGDFVIGTFIPLESKKPKGFFGYKSEIFNENFGPD  
FREEETFFSVFAIFFPAATGILAGANISGDLADPOSAIPKGTLLAILITTLVYVVGIAVSVGSCVVRDATGNVNDTIVTEL  
TNCTSAACKLNFDSSCESSPCSYGLMNNFQVMSMVSGFTPLISAGIFSATLSSALASLVSA PKIFQALCKDNIYPAFQM  
FAKGYGKNEPLRGYILTEFLIALGEFILIAELNVIAPIISNFFLASVALINFSVFHASLAKSPGWRPAFKYYNMWISLLGA  
ILCCIVMFVINWAAALLTYVIVLGLYIYVYKKPDVNWGSSQTALTYLNALQHSIRLSGVEDHVKNFRPQCLVMTGAPNS  
RPALLHLVHDFTKNVGLMICGHVHMGPRRQAMKEMSIDQAKYQRWLIKKNMKAFYAPVHADDLREGAQYLMQAAGLGRMK  
PNTLVLGFKKDWLQADMRDVMYINLFHDAFDIQYGVVVIRLKEGLDISHLQGGQEELLSSQEKSPGTDVNVVSVEYSKKS  
DLDTSKPLSEKPI THKVEEEDGKTATQPLLKKEKSGPIVPLNVADQKLEASTQFQKKQKNTIDVWWLFDDGGLTLLIP  
YLLTTKKKWKDCKIRVFIGGKINRIDHRRAMATLLSKFRIDFSDIMVLGDINTKPKKENIIA FEETIEPYRLHEDDKEQ  
DIADKMKEDPWRITDNELELYKTKTYRQIRLNELLKEHSSTANIIVMSLPVARKGAVSSALYMAWLEALSKDLPPILLV  
RGNHQSVLTFYS

## FIGURE 24

## FIGURE 25

Peptide names	Solubility	
CAA9p1	1mg/1ml H <sub>2</sub> O	H-CDPAASSSAEDSLSD-NH <sub>2</sub>
CAA9p2	1mg/1ml H <sub>2</sub> O	Ac-KKSDLDTSKPLSEK-NH <sub>2</sub>
CAA9p3	1mg/1ml H <sub>2</sub> O	Ac-PLKKESKGPIVPIG-NH <sub>2</sub>
CAA9p4	min. amt. DMSO/H <sub>2</sub> O	Ac-EHSILMIDEIC-NH <sub>2</sub>
CAA9p4MAPS	1mg/ml buffer pH7.5	Ac-EHSILMIDEIC-on 8-Branch Maps
CAA9p5	1mg/1ml H <sub>2</sub> O	Ac-DFREEETC-NH <sub>2</sub>
CAA9p5MAPS	1mg/1ml H <sub>2</sub> O	Ac-DFREEETC-on 8-Branch Maps

# FIGURE 26



## FIGURE 27

GGCAGGAGGAGAACTTAAAGAAATTCAGATATGTGAAGTTGATTTCGAAACCTCGTCA  
TCCTCTGATGACAGTTGTGACAGCTTTGCTTCTGATAATTTTGCAAACACGAGGCTGCAGTCA  
GTTCCGGAAGGCTGTAGGACCCGACGCCAGTGCAGGCACTCTGGACCTCTCAGGGTGGCGAT  
GAAGTTTCCAGCGCGGAGTACACAGGGGAGCAACCAACAAAAAGCAGAGTCCCGCCAGCCCT  
CAGAGAATTTCTGTGACTGATTCCAACCTCCGATTGAGAAGATGAAAAGTGAATGAAATTTTGG  
AGAAAAGGGCTTTAAATATAAAGCAAAACAAAGCAATGCTTGCAAACTCATGTCTGAATTA  
GAAAGCTTCCCTGGCTCGTTCCGTGGAGACATCCCTCCAGGCTCCGACTCACAATCAAGG  
AGACCGCAAGGCGTACATTCCTGGGTGTTGCTTCCAGGAGAAACCTGAACGGAGAGCTCG  
TCCTCTTACCAGGTCAAGGTCCCGGATCTCTGGGTCCCTTGACGCTCTACCATGGAGGAGGA  
GGAGGAAGAGGATAAGTACATGTTGGTGAGAAAGAGGAAAGACCGTGGATGGCTACATGAAT  
GAAGATGACCTGCCAGAACCCGTCGCTNCAGATCACTCGTGAACCTTCCGCATATAATTCGC  
CCAGTGGAAGAAATACAGAAAGGAGAGGAGTTGGAGAACGTCTGCAGCAATTCTCGAAGAGA  
AGATTATAACCGTTCACTGGGYTCTACTTGTCTCATCAATGCCGTGAGAAGACTATTGATACCA  
AACAACTGCAGAAACCCAGACTGCTGGGGCGTTCGAGGCCAGTTCTGTGGCCCTGCCTTCG  
AAACCGTTATGGTGAAAGGTCAGGGATGCTCTGCTGGATCCGAACCTGGCATTGCCCGCTTG  
TCGAGGAATCTGCAACTGCAGTTTCTGCCGCGAGGAGATGGACGGTGTGCGACTGGGGTCTT  
TGTGTATTGAAACCAATATCATGGCTTTGGGAATGTGCATGCCTACTTGAAAAGCCTGAAACA  
GGAATTTGAAATGCAAGCATAATATCTGGAAAATTTGCTGCCTGCCTTCTACTTCTCAAATCTT  
TCTTGTAAGGTTTCCAAATTTTTCCTGAAACCTGAGTTAAAAATCTTGATGATCAGCCTGT  
TTCATAAGAACTCCAATCAAGTTAMTCTTAGCAGACATGTGTTTCTGGAGCATCAGAGAAG  
TATATTGCTAGTTACACTTTGCCCTCCTGCAGTTTCTTCTGCTGCCACCCCCCTCTCATAGC  
ATTCCCCCTCTATTTCCATTGCTCCCTCTCCCAACCCGCTTAAGTTTCTGAAATTTCTTTTA  
AAWTTACAGTTTAAAGGAAAAGCCATATTTTATTTAAGTGGGTGTTGGAAATAGCCCCCTCAT  
AAAAACCTAAGCACTTGGAAACACAATAATAGTATTAACCTAAGTATCCTATTGAAATTTCA  
GAGAAGAGCCTTCTAAGTTTACACAAAAACGAGTATGATTTAGCATTCTACTAGTTGAA  
ATTTTTAATAGAATCAAGGCACAAAAGTCTTAAAAACCATGTGGAAAAATTAGGTAATTATKGC  
ARATTGAKGGTCYCYCAATCCCAYGWATKSGCTTATGKTACMARKKGKTGTTCMCACTTRAG  
ACYTAATTTTCYCTAATTTCTTCYGSCCGAAGGKWAAGKGGKGCCTCCRGCTTACMCGATCAT  
AATTCMAAGGKTGGKGGSCAATGTAAYMCTTAATTAATAATKRWGGAAGAGCYATCTGG  
AGATTAWGAGTAAGCTGATTTGAATTTTCACTATAAACTTTAGTATAATTGTAGTTTGCAA  
GKTATTTTCACTGACATGTAAGGKATTGCAATAAAATTTCTGGACAATTTGKATGGAACT  
TGATATTAAAACTAGTCTGTGGKCTTTGCAGTTTCTTGTAATTTATAAACCCAGGCACAAG  
GTTCAAGTTTAGATTTTAAAGCACTTTTATAACAATGATAAGTGCCTTTTGGAGATGTAATTT  
TAGCAGTTTGTAAACCTGACATCTCTGCCAGTCTAGTTTCTGGGCAGGTTTCTGTGTGATAT  
TCCCCCTCCTCTTGCATTAATCAAGGTATTTGGTAGAGGTGGAATCTAAGTGTGTTGTATGTC  
CAATTTACTTGCATATGTAACCATTTGCTGTGCCATTCAATGTTTGATGCATAATTGGAC  
CTTGAATCGATAAGTGTAATACAGCTTTTGTATCTGTAATGCTTTTATACAAAAGTTTATT  
TTAATAATAAAATGTTTGTCTAAAAAATAAATAAATAAATTTGCGGCCGCAAGCTTATT  
CCCWTTAGTGAGKSWTAATTTTAGCTTGGCACTGGCCGTCGTTTACAAAGCTCGTGACTGGGA  
AAACCTTGGCGTTACCAACTTAATCGCCTTGCAGCACATCCCCCTTTCGCCAGCTGGCGTAA  
TAGCGAAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGG  
ACGCGCCCTGTAGCGGCGCATTAAGCGCGCGGGTGTGGTGGTTACGCSAGCGTGACCGCTA  
CACTTGCCAGCGCCCTAGCGCCCGCTCTTTCGCTTCTTCTCTCTCTCGCMCGTTTCGCCG  
CTTTCCCKCAAGCTNTAAATCGGGG

One position equals 20 bases.

- if more than 2 bases disagree with consensus sequences
- if more than 10 positions are unknown.
- if more than 10 positions are gap characters

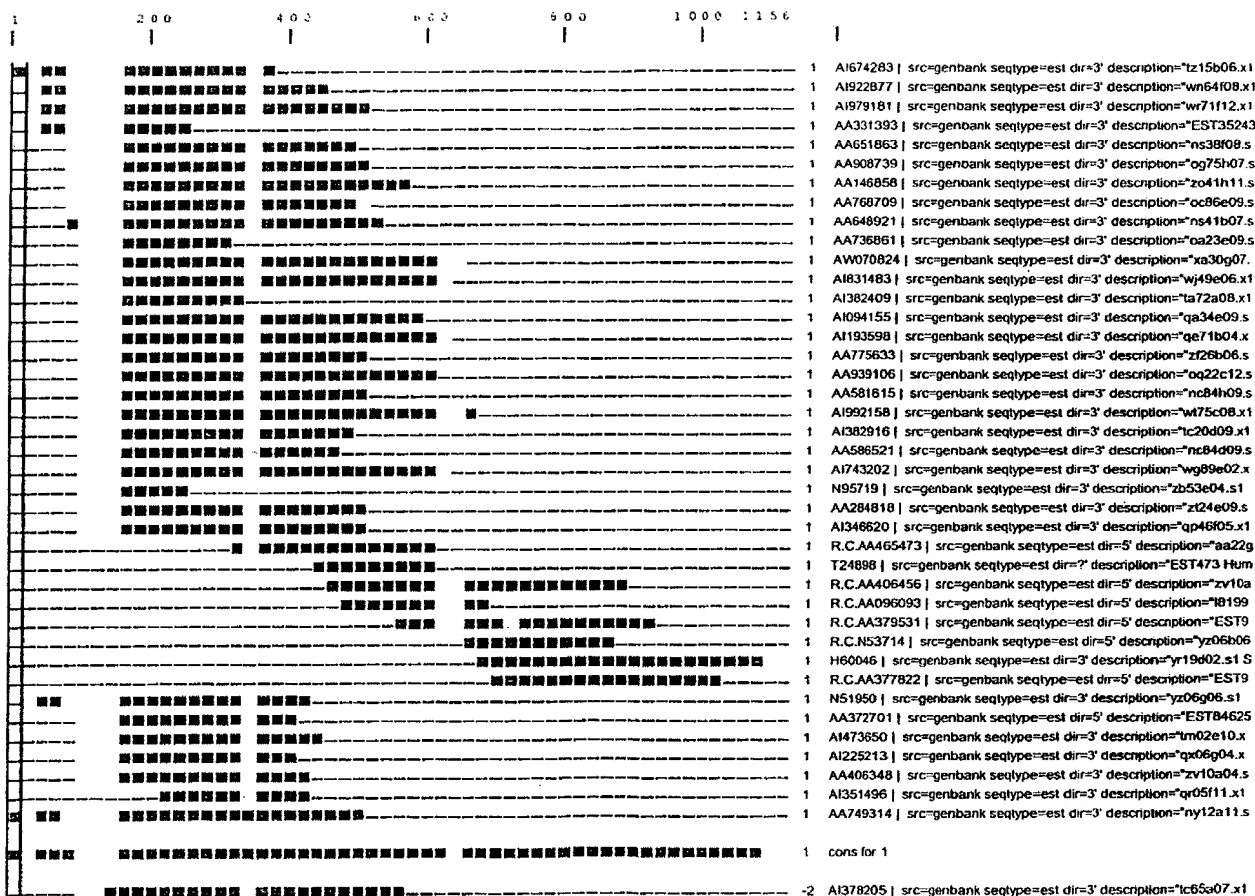


FIGURE 28A

A1674283 | src=genbank seqtype=est dir=3' description="t215b06.x1 NCI\_CGAP\_Ut2 Homo sapiens cDNA clone IMAGE:2288627 3', mRNA s' srcf=gbcu7/29773  
A1922877 | src=genbank seqtype=est dir=3' description="wn64f08.x1 NCI\_CGAP\_Lu19 Homo sapiens cDNA clone IMAGE:2450247 3', mRNA s' srcf=gbest36/51593  
A1979181 | src=genbank seqtype=est dir=3' description="wr71f12.x1 NCI\_CGAP\_Ut1 Homo sapiens cDNA clone IMAGE:2493167 3', mRNA s' srcf=gbest37/46305  
AA331393 | src=genbank seqtype=est dir=3' description="EST35243 Embryo, 8 week 1 Homo sapiens cDNA 3' end, mRNA sequence." srcf=gbest13/573  
AA651863 | src=genbank seqtype=est dir=3' description="ns38f08.s1 NCI\_CGAP\_GCB1 Homo sapiens cDNA clone IMAGE:1185927 3', mRNA s' srcf=gbest17/53268  
AA908739 | src=genbank seqtype=est dir=3' description="og75h07.s1 NCI\_CGAP\_Ov8 Homo sapiens cDNA clone IMAGE:1454173 3', mRNA s' srcf=gbest21/613  
AA146858 | src=genbank seqtype=est dir=3' description="zo41h11.s1 Stratagene endothelial cell 937223 Homo sapiens cDNA clone IM" srcf=gbest10/20752  
AA768709 | src=genbank seqtype=est dir=3' description="oc86e09.s1 NCI\_CGAP\_GCB1 Homo sapiens cDNA clone IMAGE:135616 3', mRNA s' srcf=gbest19/36742  
AA648921 | src=genbank seqtype=est dir=3' description="ns41b07.s1 NCI\_CGAP\_GCB1 Homo sapiens cDNA clone IMAGE:1186165 3', mRNA s' srcf=gbest17/50927  
AA736861 | src=genbank seqtype=est dir=3' description="oa23e09.s1 NCI\_CGAP\_GCB1 Homo sapiens cDNA clone IMAGE:1305832 3', mRNA s' srcf=gbest18/70299  
AW070824 | src=genbank seqtype=est dir=3' description="xa30g07.x1 NCI\_CGAP\_Br18 Homo sapiens cDNA clone IMAGE:2568348 3', mRNA s' srcf=gbest38/61005  
A1831483 | src=genbank seqtype=est dir=3' description="w49e06.x1 NCI\_CGAP\_Lu19 Homo sapiens cDNA clone IMAGE:2406178 3', mRNA s' srcf=gbest35/22416  
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A1094155 | src=genbank seqtype=est dir=3' description="qa34e09.s1 Soares\_tetal\_fetus\_Nb2HF8\_9w Homo sapiens cDNA clone IMAGE:1688680 3', mR" srcf=gbest23/18508  
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AA939106 | src=genbank seqtype=est dir=3' description="oa22c12.s1 NCI\_CGAP\_GC4 Homo sapiens cDNA clone IMAGE:1587094 3', mRNA s' srcf=gbest21/28363  
AA581615 | src=genbank seqtype=est dir=3' description="nc84h09.s1 NCI\_CGAP\_GC1 Homo sapiens cDNA clone IMAGE:797537 3', mRNA s' srcf=gbest16/43395  
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A1382916 | src=genbank seqtype=est dir=3' description="tc20d09.x1 Soares\_NHfMPu\_S1 Homo sapiens cDNA clone IMAGE:2064401 3', mR" srcf=gbest26/69406  
AA586521 | src=genbank seqtype=est dir=3' description="nc84d09.s1 NCI\_CGAP\_GC1 Homo sapiens cDNA clone IMAGE:797489 3', mRNA s' srcf=gbest16/48294  
A1743202 | src=genbank seqtype=est dir=3' description="wg89e02.x1 Soares\_NSf\_F8\_9w\_OT\_PA\_P\_S1 Homo sapiens cDNA clone IMAGE:237" srcf=gbcu8/18434  
N95719 | src=genbank seqtype=est dir=3' description="zb53e04.s1 Soares\_fetal\_lung\_NbHL19W Homo sapiens cDNA clone IMAGE:30732" srcf=gbest6/55806  
AA284818 | src=genbank seqtype=est dir=3' description="z124e09.s1 Soares\_ovary\_tumor\_NbHOT Homo sapiens cDNA clone IMAGE:714088" srcf=gbest12/8311  
A1366620 | src=genbank seqtype=est dir=3' description="qp46f05.x1 NCI\_CGAP\_Co8 Homo sapiens cDNA clone IMAGE:1926081 3', mRNA s' srcf=gbest26/33599  
R.C.AA465473 | src=genbank seqtype=est dir=5' description="aa22g08.r1 NCI\_CGAP\_GCB1 Homo sapiens cDNA clone IMAGE:914046 5', mRNA s' srcf=gbest15/9675  
T24898 | src=genbank seqtype=est dir=7' description="EST473 Human colorectal cancer Homo sapiens cDNA clone 17B12, mRNA seque" srcf=gbest11/46394  
R.C.AA408456 | src=genbank seqtype=est dir=5' description="zv10a04.r1 Soares\_NHfMPu\_S1 Homo sapiens cDNA clone IMAGE:753198 5', mRN" srcf=gbest14/23757  
R.C.AA096093 | src=genbank seqtype=est dir=5' description="l8199.seq.F Human fetal heart, Lambda ZAP Express Homo sapiens cDNA 5', " srcf=gbest9/36451  
R.C.AA379531 | src=genbank seqtype=est dir=5' description="EST92378 Skin tumor 1 Homo sapiens cDNA 5' end, mRNA sequence." srcf=gbest13/48697  
R.C.N53714 | src=genbank seqtype=est dir=5' description="yz06b06.r1 Soares\_multiple\_sclerosis\_2NbHMSP Homo sapiens cDNA clone IMA" srcf=gbest16/14672  
H60046 | src=genbank seqtype=est dir=3' description="yr19d02.s1 Soares\_fetal\_liver\_spleen\_1NFLS Homo sapiens cDNA clone IMAGE" srcf=gbest14/55137  
R.C.AA377822 | src=genbank seqtype=est dir=5' description="EST90803 Synovial sarcoma Homo sapiens cDNA 5' end, mRNA sequence." srcf=gbest13/46988  
N51950 | src=genbank seqtype=est dir=3' description="yz06g06.s1 Soares\_multiple\_sclerosis\_2NbHMSP Homo sapiens cDNA clone IMA" srcf=gbest16/12908  
AA327201 | src=genbank seqtype=est dir=5' description="EST84625 Colon adenocarcinoma IV Homo sapiens cDNA 5' end, mRNA sequence" srcf=gbest13/41867  
A1473650 | src=genbank seqtype=est dir=3' description="tm02e10.x1 NCI\_CGAP\_Co14 Homo sapiens cDNA clone IMAGE:2155434 3', mRNA s' srcf=gbest28/8505  
A1225213 | src=genbank seqtype=est dir=3' description="qx06g04.x1 NCI\_CGAP\_Lym12 Homo sapiens cDNA clone IMAGE:2000598 3', mRNA s' srcf=gbest24/66924  
AA406348 | src=genbank seqtype=est dir=3' description="zv10a04.s1 Soares\_NHfMPu\_S1 Homo sapiens cDNA clone IMAGE:753198 3', mRN" srcf=gbest14/23649  
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AA749314 | src=genbank seqtype=est dir=3' description="ny12a11.s1 NCI\_CGAP\_GCB1 Homo sapiens cDNA clone IMAGE:1271516 3', mRNA s' srcf=gbest19/17507

cons for 1

A178205 | src=genbank seqtype=est dir=3' description="tc65a07.x1 Soares\_NHfMPu\_S1 Homo sapiens cDNA clone IMAGE:2069460 3', mR" srcf=gbest26/64695

FIGURE 28B

218/236

METSSSSDDS CDSFASDNFA NTRLQSVREG CRTSRQCRHS GPLRVAMKFF  
ARSTRGATNK KAESRQPSN SVTDSNSDSE DESGMNFLEK RALNIKQNK  
MLAKLMSELE SFPGSFRGRH PLPGSDSQSR RPRRRTFPGV ASRRNPERRA  
RPLTRRSRI LGSLDALPME EEEEEDKYML VRKRKTVDGY MNEDDLPRTR  
RYRSSVTLPH IIRPVEEIQK ERSWRTSAAI LEEKIITVHW ALLVINAVRR  
LLIPKQTAET QTAGAFEASS VAPAFETVMV KRSGMLCWIR TGIARLVEES  
ATAVSAGSEM DCVRLGSLCI

## FIGURE 29

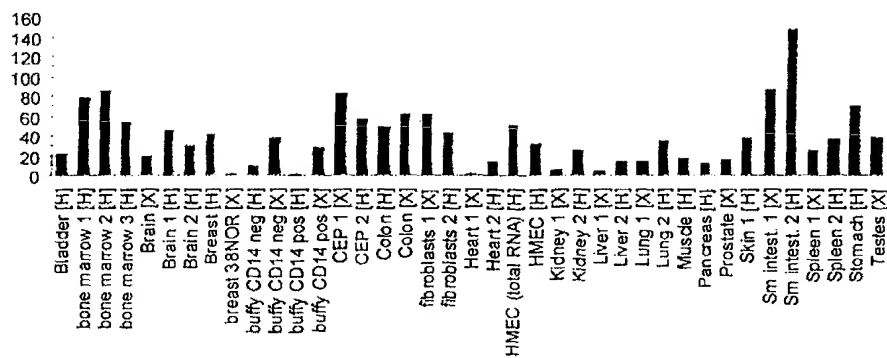


FIGURE 30A

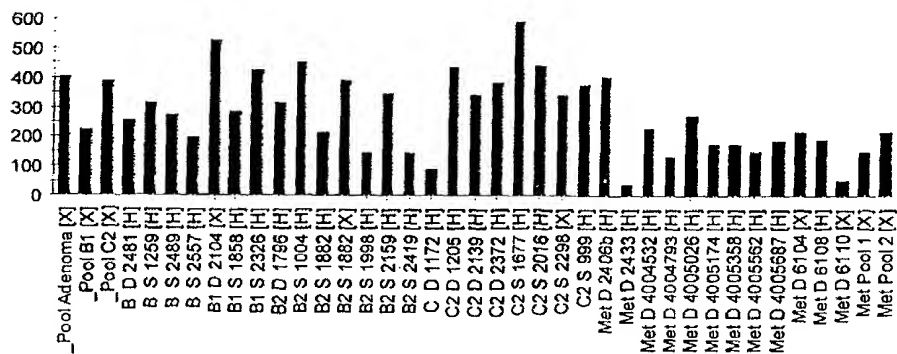


FIGURE 30B



ACTCACTAINGGGCGAATGGGCCCTCTNNATGCATGCTCGAGCGCCCGCCAGTGTGATGGATA  
TCTGCAGAAATTCGCCCTTAAGCAGTGGTAACAACGCAGAGTACGCGGGGGGAGACCGGAGGG  
CAGAAGGCAGAGTCCAGGCTTAGACTGCAGTTCCTCGCTTACCTGTGCAGTCTAATTTTGAGC  
TGCCTCTTTGTAGTCTTAAAGGCAGGAGCTTCGTGTTGTGGGTCTGCTAACCCGTACGTTTCC  
GTGGGCAAGTCGTGTGTA CTCTCGCC [REDACTED] GCTCAGCTCCAAACACGCTTCTACACTGATAAC  
AAGAAATATGCCGTAGATGATGTTCCCTTCTCAATCCCTGCTGCCTCTGAAAATTGCCGACCTTA  
GTAACATCATCAATAAACTACTAAAGGACAAAAATGAGTTCCACAAAACATGTGGAGTTTGATT  
TCCTTATTAAGGGCCAGTTTCTGCGAATGCCCTTGGACAAACACATGGAAATGGAGAACATCT  
CATCAGAAGAAGTTGTGGAAATAGAATACGTGGAGAAGTATACTGCACCCCAGCCAGAGCAA  
TGCATGTTCCATGATGACTGGATCAGTTCAATTAAGGGGCAGAGGAATGGATCTTGACTGGT  
TCTTATGATAAGACTTCTCGGATCTGGTCTTGGAAAGGAAAGTCAATAATGACAATTGTGGGA  
CATACGGATGTTGTAAGATGTGGCCTGGGTGAAAAAGATAGTTTGTCTGCTTATTATTG  
AGTGCTTCTATGGATCAGACTATTCCTTATGGGAGTGGAATGTAGAGAGAAACAAAGTGAA  
AGCCCTACACTGCTGTAGAGGTCATGCTGGAAGTGATGTTCTATAGCTGTTGATGGCTCAGG  
AACTAAATTTTGCAGTGGCTCCTGGGATAAGATGCTAAAGATCTGGTCTACAGTCCCTACAGA  
TGAAGAAGATGAAATGGAGGAGTCCACAAATCGACCAAGAAAGAAACAGAAGACAGAACAG  
TTGGGACTAACAAAGGACTCCCATAGTGACCTCTCTGGCCACATGGAGGCAGTTTCTCAGTT  
CTGTGGTCAGATGCTGAAGAAATCTGCAGTGCATCTTGGGACCATAACAATTAGAGTGTGGGT  
GTTGAGTCTGGCAGTCTTAAAGTCAACTTTGACAGGAAATAAAGTGTTTAAATTGTATTCTTATT  
CTCCACTTTGTAAACGTTTAGCATCTGGAAGCACAGATAGGCATATCAGACTGTGGGATCCCC  
GAACTAAAGATGGTTCTTTGGTGTGCTGTCCCTAACGTACATACTGGTTGGGTGACATCAG  
TAAATGGTCTCCTACCCATGAACAGCAGCTGATTTAGGATCTTTAGATAACATTGTTAAGC  
TGTGGGATACAAGAAGTTGTAAAGGCTCCTCTCTATGATCTGGCTGCTCATGAAGACAAAGTTC  
TGAGTGTAGACTGGACAGACACAGGGCTACTTCTGAGTGGAGGAGCAGACAATAAATTGTAT  
TCCTACAGATATTCACCTACCACTTCCCATGTTGGGGCA [REDACTED] AAGTGAACAATAATTGACTA  
TAGAGATTATTTCTGTAATGAAATGGTAGAGAACCATGAAATTACATAGATGCAGATGCA  
GAAAGCAGCCTTTTGAAGTTTATATAATGTTTCAACCCTTATAACAGCTAACGTATCACTTT  
TTCTTATTTTGTATTATATAATAAGATAGGTTGTGTTTATAAAATACAACTGTGGCATACA  
TTCTCTATACAACTTGAAATTAATACTGAGTTTACATTTCTCTTAAARGTAAAAAAA  
AAAAAAA

FIGURE 31

One position equals 17 bases.

- if more than 1 bases disagree with consensus sequences.
- if more than 8 positions are unknown.
- if more than 8 positions are gap characters.

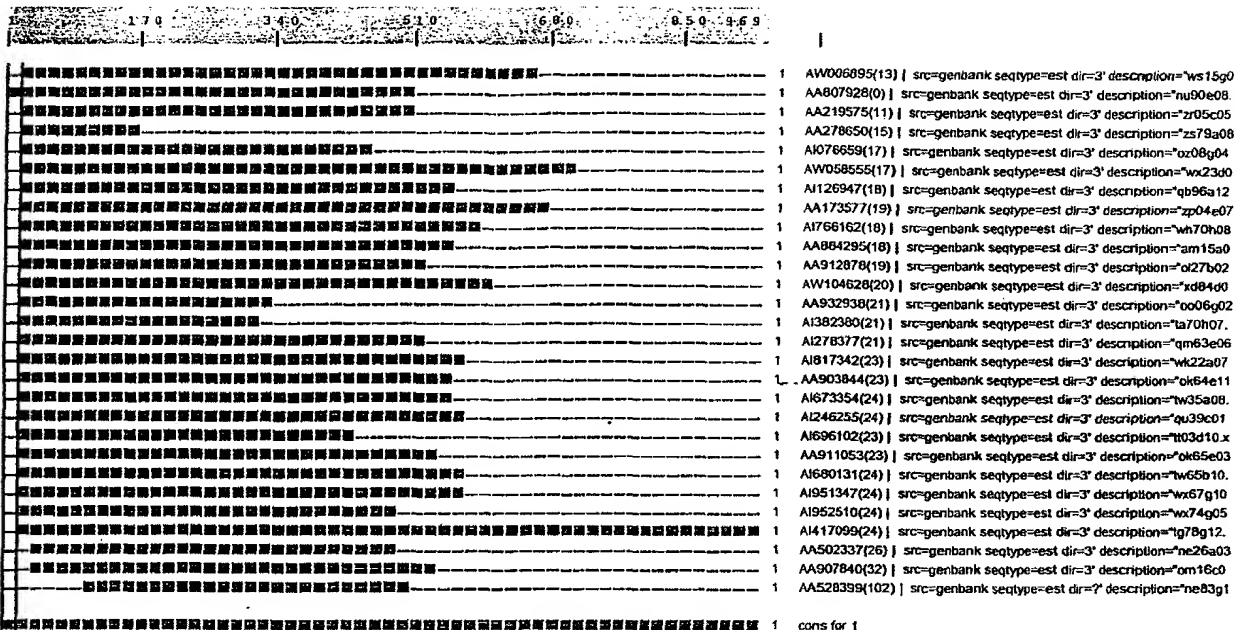


FIGURE 32A

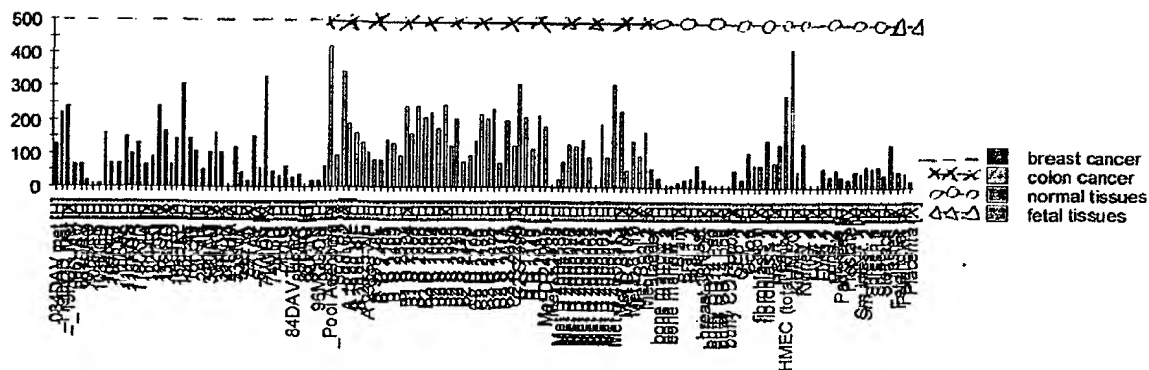
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AA219575(11) | src=genbank seqtype=est dir=3' description="zr05c05.s1 Stratagene NT2 neuronal precursor 937230 Homo sapiens cDNA cl" src=gbest11/22843  
AA278650(15) | src=genbank seqtype=est dir=3' description="zs78a08.s1 NCI\_CGAP\_GCB1 Homo sapiens cDNA clone IMAGE:703670 3', mRNA s" src=gbest12/4143  
AJ076659(17) | src=genbank seqtype=est dir=3' description="oz08g04.x1 Soares\_fetal\_liver\_spleen\_1NFLS\_S1 Homo sapiens cDNA clone IM" src=gbest23/4980  
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AI126947(18) | src=genbank seqtype=est dir=3' description="qb96a12.x1 Soares\_fetal\_heart\_NbHH19W Homo sapiens cDNA clone IMAGE:1707" src=gbest23/50375  
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AJ766162(18) | src=genbank seqtype=est dir=3' description="wh70h08.x1 NCI\_CGAP\_Kid11 Homo sapiens cDNA clone IMAGE:2386143 3' siml" src=gbest33/2826  
AA884295(18) | src=genbank seqtype=est dir=3' description="am15a06.s1 Soares\_NFL\_T\_GBC\_S1 Homo sapiens cDNA clone IMAGE:1466866 3' " src=gbest20/65489  
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AJ278377(21) | src=genbank seqtype=est dir=3' description="qm63e06.x1 Soares\_placenta\_8to9weeks\_2NbHP8to9W Homo sapiens cDNA clone " src=gbest25/38348  
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AJ680131(24) | src=genbank seqtype=est dir=3' description="bw65b10.x1 NCI\_CGAP\_Ut3 Homo sapiens cDNA clone IMAGE:2264539 3' similar" src=gbest31/14554  
AJ951347(24) | src=genbank seqtype=est dir=3' description="wx74g05.x1 NCI\_CGAP\_Br18 Homo sapiens cDNA clone IMAGE:2548770 3' simila" src=gbest37/20164  
AJ952510(24) | src=genbank seqtype=est dir=3' description="wx74g05.x1 NCI\_CGAP\_Ov38 Homo sapiens cDNA clone IMAGE:2549432 3', mRNA " src=gbest37/21327  
AA177099(24) | src=genbank seqtype=est dir=3' description="tg78g12.x1 Soares\_NhHMPu\_S1 Homo sapiens cDNA clone IMAGE:2114950 3' sim" src=gbest27/33775  
AA502337(26) | src=genbank seqtype=est dir=3' description="ne26a03.s1 NCI\_CGAP\_Co3 Homo sapiens cDNA clone IMAGE:898444 3', mRNA se" src=gbest15/48530  
AA907840(32) | src=genbank seqtype=est dir=3' description="om16c08.s1 Soares\_NFL\_T\_GBC\_S1 Homo sapiens cDNA clone IMAGE:1541198 3' " src=gbest21/4257  
AA526399(102) | src=genbank seqtype=est dir=7' description="ne83g12.s1 NCI\_CGAP\_Ew1 Homo sapiens cDNA clone IMAGE:910918, mRNA seque" src=gbest15/74499

cons for 1

## FIGURE 32B

MAQLQTRFYTDNKKYA VDDVPFSIPAASEIADLSNIINKLLKDKNEFHKHVEFDF  
 LIKGQFLRMPLDKHMEMENISSEEVVEIEYVEKYTAPQPEQCMFHDDWISSIKGA  
 EEWILTGSYDKTSRIWSLEGKSIMTIVGHTDVVKDVAWVKKDSLSCLLLSASMD  
 QTILLWEWNVERNKV KALHCCRGHAGSVDSIAVDGSGTKFCSGSWDKMLKIWS  
 TVPTDEEDEMEESTNRPRKKQKTEQLGLTRTPIVTLSGHMEAVSSVLWSDAEEIC  
 SASWDHTIRVWVVESGSLKSTLTGNKVFNCISYSPLCKRLASGSTDRIHRLWDPR  
 TKDGSLVSLSLTSHGTGWVTSVKWSPTHEQQLISGSLDNIVKLWDTRSCAPLYDL  
 AAHEDKVLSDWTDGTGLLSGGADNKLYSYRYSPTTSHVGA.

# FIGURE 33



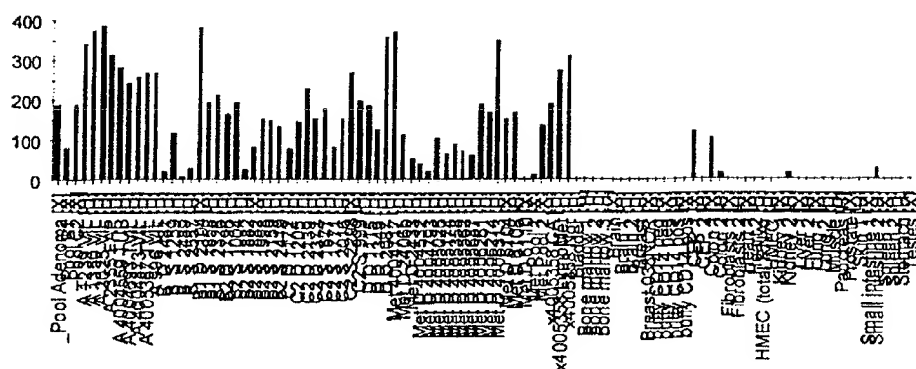
# FIGURE 34

[illegible]

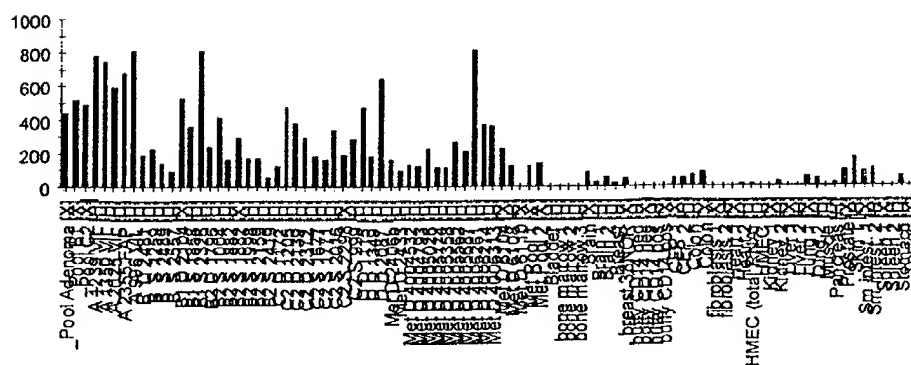
## FIGURE 35

[illegible]

### FIGURE 36



### Figure 37



### Figure 38

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AGAATGCCCTCGGCTCCITTCGCCGCCGGTATCTGGTGTATATGATCCCCTCTCACTCTCATAGGAGAC  
GATCTCGAAGTAGATCATATACACCAGAATACCGCCGCCGAAGGAGCCGAAGCTCAAGGGTAAAGACAGTA  
GAAATATTATTCAGTAAACAATAATGTGTGAACCTTTTAAAGATGGATAATAGGGCATGGACTGAGTGCTGCT  
ATCTTGAAATGTGCACAGGTACACTTACCTTTTTTTTTTTTTTTTAAAGTTTTCCCATTCAGGATAACA  
ACATTGTGATCTGTACTACAGGAACCAATGTGATGCGTCATACATGTGGCTATAAAGTACATAAATATA  
TCTAACTATTTCATAATGTGGGGTGGGTAATACTGTCTGTGAAATAATGTAAGAAGCTTTTCACTTAAAAAA  
AATGCATTACTTTCACCTTAACACTAGACACCCAGGTCGAAAATTTTCAAGGTTATAGTACTTATTTCAACAA  
TTCTTAGAGATGCTAGCTAGTGTGAAGCTAAAAATAGCTTTATTTATGCTGAATTGTGATTTTTTATGC  
GAAAATTTTTTAGTTCTAATCATTGATGATAGCTTGGAAATAAATAATTATGCCATGGCATTGACAGTT  
CATTTATCCCTATAAGAAATAAATGAGTTAGAGAGAATGGTGGTGTGAGCTGATTATTAACAGTTACTG  
AAATCAAAATATTTATTTGTACATTATTCATTGTATTTTAGGCTTCCCTTTTACATTCTTTTTATATGCA  
TTCTGACATTACATATTTTAAAGACTATGGAAATAATTTAAAGATTAAAGCTCTGGTGGATGATTATCTG  
CIAAGTAAGTCTGAAATGTAAATATTTGATAATACTGTAATATACCTGTACACACAAATGCTTTTCTAATG  
TTTTAACTTGAGTATTGCAGTTGCTGCTTTGTACAGAGGTTACTGCAATAAAGGAAGTGGATTCAATAAA  
CCTAAAAA

## FIGURE 39

CCAAGTTCTACCTCATGTTTGGAGGATCTTGCTAGCTATGGCCCTCGTACTCGGCTCCCTGTTGCTGCTGG  
 GGCTGTGCGGGAACTCCTTTTCAGGAGGGCAGCCTTCATCCACAGATGCTCCTAAGGCTTGGAAATTATGAA  
 TTGCCTGCAACAAATTATGAGACCCAAAGACTCCCATAAAGCTGGACCCATTGGCATTCTCTTTGAAC TAGT  
 GCATATCTTTCTCTATGTGGTACAGCCGCGTGATTTCCCAAGAGATACTTTGAGAAAATCTTACAGAAAGG  
 CATATGAATCCAAAATTGATTATGACAGCCAGAAACTGTAATCTTAGGTCTAAAGATTGTCTACTATGAA  
 GCAGGGATTATTCTATGCTGTGCTCTGGGGCTGCTGTTATTATTCTGATGCCTCTGGTGGGGTATTCTCT  
 TTGTATGTGCTGCTGTATCAAAATGTGGTGGAGAAATGCACAGCGACAGAAAGGAAATGGGCCCTTCC  
 TGAGGAAATGCTTTGCAATCTCCCTGTTGGTGATTGTATATAATAAGCATTGGCATCTTCTATGGTTTT  
 GTGGCAAAATCACCAGGTAAAGAACCCGGATCAAAAGAGTCCGAAACTGGCAGATAGCAATTTCAAGGACTT  
 GCGAATCTCTTGAATGAATCTCCAGAGCAATCAAAATATATATGGCCCAAGTACAACACTACCAAGGACA  
 AGGCGTTACAGATCTGAACAGTATCAATTCAGTGTAGGAGGCGGAATTTCTGACCGACTGAGACCCAAAC  
 ATCATCCCTGTTCTTGATGAGATTAAAGTCCATGGCAACAGCGATCAAGGAGACCAAGAGGCGTTGGAGAA  
 CATGAACAGCACCTTGAAGAGCTTGACCAACAAAGTACACAGCTTAGCAGCAGTCTGACCAGCGTGAAAA  
 CTAGCCCTCCGGTCTATCTCTCAATGACCCCTCTGTGCTTGGTGCATCCATCAAGTGAACCTGCAACAGCATC  
 AGATTGTCTCTAAGCCAGCTGAATAGCAACCCCTGAATGAGGAGCTTCCACCCGTTGGATGCAGAACTTGA  
 CAACGTTAATAACGTTCTTAGGACAGATTGTGATGGCTGGTCCAAACAGGGCTATCAATCCCTTAATGATA  
 TACCTGACAGAGTACAAACGCAAAACACAGCTGTCTGAGCAGGTATCAAAGGGTCTTGAATCCATTGGT  
 TCAGATATCGAATGTAATCTAGCGTCTTCTTATTACAGGATATACTCTCAGCATTCTCTGTTTATGTTAA  
 TAACTCTGAAAGTTACATCCACAGAAATTTACCTACATTGGAAGATGATGATCACTGGTGGCTGGGTG  
 GCTGCTGATCTCTCTCTGCTGACCCCTCTCTGATGTTTCTTACTACCTGGGCTTACTGTGCGGCTGTGC  
 GGCTATGACAGGCATGCCACCCCGACCCGAGGCTGTGTCTCAAACACCGGAGGCGCTCTTCTCATGGT  
 TGGAGTTGGATTAAAGTTTCTCTTTTGTGGATATTGATGATCATTGTGTTCTTACCTTTGTCTTTGGTG  
 CAAATGTGGAAAACCTGATCTGTGAACCTTACACAGCAAGGAATTATTCGGGCTTTGGATACACCCCTAC  
 TTACTAAATGAAGACTGGGAATACTATCTCTCTGGGAAGCTATTTAATAAATCAAAAATGANGCTCACTT  
 TGAACAAAGTTTACAGTGAATGCAAAAAAATAGAGGCACTTACGGCACTCTTCACTGCAAGACAGCTTCA  
 ATATCASTGAACATCTCAACATTAATGAGCATACTGGAAGCATAAGCAGTGAATTGGAAAGTCTGAAGGTA  
 AATCTTAATATCTTTCTGTTGGGTGACAGGAGGAAACCTTCAGGATTGCTGCTGTGGAATAGA  
 CAGATGAATTATGACAGCTACTTGGCTCAGACTGGTAAATCCCCCGCAGGAGTGAATCTTTTATCATTG  
 CATATGATCTAGAAGCAAAAGCAACAGTTTGGCCCCAGGAAATTTGAGGAACTCCCTGAAGAGATGCA  
 CAAACTATTAAACAATTCACAGCAACAGGATCTTCTATAGAACAATCACTGAGCACTCTATACCAAG  
 CGTCAAGATACTTCAACGCAACAGGGAATGGATTGTTGGAGAGAGTAAGTATAGGATTCTAGCTTCTGTGATT  
 TTGCTCAGAACTTCATCAACAATACTTCTCTGTTATTATTGAGGAACTAAGAAATGATGGGAGAACCA  
 ATAAATAGGATATTTTGAACATTAATCTGCACTGGATCGAGTCTCTATCAGTGAAGAAATGGCATCGTGCAA  
 ACCTGTGGCCACCGCTGATAGTACTGCTGTTGATGCTTTCTGTGTAGCTACATTATCGACCCCTTGAATT  
 TGTTTTGGTTTGGCATAGGAAAGCTACTGTATTTTACTTCCGGCTCTAATTTTGGCGTAAACTGGCT  
 AAGTACTATCGTCAATGGATTGCGAGGACGTGTACGATGATGTTGAAACTATACCCATGAAAAATATGGA  
 AAATGGTAAATATGGTTATCATAAAGATCATGTATATGGTATTCAAATCCTGTTATGACAAGCCCATCAC  
 AACATGATGATGCTGATGTTGAAACTGCTTGAGCATCAGGATACTCAAAGTGGAAAGGATCACAGATTTTGG  
 GTAGTTTCTGGGTCTACAAGGACTTTCCAAATCCAGGAGCAACGCCAGTGGCAACGTAGTACTCAGGCCG  
 GCACCAAGGCAACGGCACCATTTGGTCTCTGGGTAGTGCTTTAAGAAATGAACACAATCACGTTATAGTCCAT  
 GGTCCATCACTATTCAGGATGACTCCCTCCCTTCTGTCTATTTTGTTTTACTTTTTTACTTACTGAGT  
 TTCTATTTAGACACTACAACATATGGGGTGTGTTGTTCCATTGGATGCAATTTCTATCAAAACTCTATC  
 TGAATGATGGCTAGATTCAACATATTGCGATGTGTGGAGTGTGCTGAACACACACCAGTTTACAGGAAAGAT  
 GCATTTTGTGTACAGTAAACGGTGTATATACCTTTTGTACCACAGAGTTTAAACAAATGAGTATAT  
 AAGACTTTCTTCTAAATGAGCTAAATAAGTCAACATGACTTCTTGGTGTGTTGAAATAATCCATTTTC  
 ACTAAAAGTGTGTGAACCTACAGCATATCTTCAACGAGAGATTTTCTATATTTACTTTATCAAGAT  
 TGGCCATGTTCCACTTGGAAATGGCATGCAAAAGCCATCATAGAGAAACCTGCGTAACTCCATCTGACAAA  
 TTTCAAAAGAGAGAGAGATCTTGAAGAGAAATGCTGTTCTGTTCAAAAGTGGAGTTGTTTAAACAGATGC  
 CAATTACGGGTGATCAGTTTACAGAGTTTCTGTTGATAGGATAAACATTAATGGAGTGCAGCTAACCA  
 TGAGTATCATCAGACTAGTATCAAGTGTCTAAAATGAAATATGAGAAGATCCTGTCACAATCTTAGATC  
 TGGTGTCCAGCATGGATGAAACCTTTGAGTTTGGTCCCTAAATTTGCATGAAAGCACAAGGTAATATTCA  
 TTTGCTTCAGGAGTTTCTGTTGGATCTGTCAATATCAAAAGTATCAGCAATGAAGAACTGGTCCGACAA  
 AATTTAACGTTGATGTAATGGAATCCAGATGTAGGCATTTCCCCAGGCTTTTTCATGTGCAGATTGCAG  
 TCTGATTCATTGAATAAAAGGAATTTG

FIGURE 40

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CAGCGGCGGCTGAATTCTAGGGCGGGTTCGCGCCCCGAAGGCTGAGAGCTGGCGCTGCTCGTGCCCTGTG  
TGCCAGACGGCGGAGCTCCGCGGCCGACCCCGCGGCCCGCTTTGCTGCCGACTGGAGTTTGGGGGAAG  
AAACTCTCTCGCGCCCAAGATTTCCTCGGCGAAGGACAGCGAAAGATGAGGGTGGCAGGAAGA  
GAAGGCGCTTTCTGTCTGCGCGGGTTCGAGCGCGAGAGGGCAGTGCCATGTTCTCTCCATCCTAGTGGC  
GCTGTGCTGTGGCTGACCTTGGCGCTGGCGGTGCGCGCGCGCCCTGCGAGGCGGTGCGCATCCCTATG  
TGCCGGCAGATGCCCTGGAACATCACGCGGATGCCAACCACCTGCACCACAGCAGCGAGGAGAACGCCA  
TCCTGGCCATCGAGCAGTACGAGGAGCTGGTGACGTGAAGTGCAGCGCGTGTGCGCTTCTTCTTCTG  
TGCCATGTACGCGCCCATTTGACCCCTGGAGTTCTCTGACGACCTATCAAGCCGTGCAAGTGGTGTGC  
CAACGCGCGCGGACGACTGCGAGCCCTCATGAAGATGTACACCCAGCTGGCCCGAAAGCTGGCCCT  
GCGACGAGCTGCCTGTCTATGACCGTGGCGTGTGCATTTGCGCTGAAGCCATCGTCAAGGACCTCCCGGA  
GGATGTTAAGTGGATAGACATCACACGAGCATGATGGTACAGGAAGGCCCTTTGATGTTGACTGTAAA  
CGCCTAAGCCCCGATCGGTGCAAGTGTAAAAAGGTGAAGCCAACTTTGGCAAGGTATCTCAGCAAAACT  
ACAGCTATGTTATTCATGCCAATAAAGCTGTGCGAGGAGTGGCTGCAATGAGGTACACAGCGTGGT  
GGATGTTAAAGAGATCTCAAGTCTCATCCCCATCCCTCGAAGTCAAGTCCGCTCATTACAAATCT  
TCTTGCCAGTGTCCACACATCCTGCCCATCAAGATGTTCTCATCATGTGTTACGAGTGGCGTTCAAGGA  
TGATGCTTCTTGMAAATTGCTTAGTTGAAAAATGGAGAGATCAGCTTAGTMAAGATCCATACAGTGGGA  
AGAGAGGCTGCAGGAACAGCGGAGAACAGTTTCAGGACAAGAAAGAAACAGCCGGCGGCGACAGTCTGAT  
LATCCCCCAAAACCAAGGGAAGCCCTCTGCTCCCAACACAGCCAGTCCCAAGAGAACATTAACCTA  
GGAGTGGCCAGAGAGAAACAAACCGAAAGAGTGTGAGCTAACTAGTTTCCAAAGCGGAGACTTCCGAC  
TTCCTTACAGGATGAGGCTGGGCATTGCGCTGGGACAGCCTATGTAAGGCCATGTGCCCTTGGCCCTAACA  
ACTCACTGCAAGTCTCTCATAGACACATCTTGACAGATTTTCTTAAGGCTATGCTTCAGTTTCTCTT  
CTAAGCCATCAAGGCCATAGTGGTAGGTTTGGCCCTTGGTACAGAGGTGAGTTAAAGCTGGTGGAAAA  
GGCTTATTCGATTGCAATTCAGAGTAACCTGTGTGCATCTCTAGAAGTAGGGAAAAATAATGCTTGTTA  
CAATTGCACTAATATGTGCAATGTAAAAATAATGCCATATTCAAAACAAACACGTAATTTTTTACAG  
TATGTTTTATTACCTTTTGATATCTGTGTTGCAATGTTAGTGATGTTTTAAATGTGATGAAATATAA  
TCTTTTTAAGAGGAACAGTAGTGAATGAATGTTAAAGATCTTTATGTGTTTATGGTCTGCAGAAAGGA  
TTTTTGTGATGAAGGGGATTTTTTGAAAAATTAGAGAAGTAGCATATGGAAATATAATGTGTTTTT  
TACCAATGACTTCAGTTTCTGTTTTAGCTAGAACTTAAAAACAATAATAATAMGAAAAATAAAT  
AAAAAGGAGAGGCGACAAATGTCTGGATTCTGTTTTTGGTTACCTGATTCCATCATCATGATGCTTC  
TTGTCAACACCCCTCTTAAGCAGCACCAGAAACAGTGAGTTTGTCTGTACCATTAGGAGTTAGGTACTAAT  
TAGTTGGCTAATGCTCAAGTATTTATACCCACAAGAGAGGTATGTCACTCATCTTACTCCAGGACAT  
CCACCCCTGAGAATAATTTGACAGCTTAAAAATGGCCTTCATGTGAGTGCCAAATTTGTTTTCTTCTCAT  
TTAAATATTTTCTTTCCTAAATACATGTGAGAGGAGTTAAATATAATGTACAGAGAGGAAAGTTGAGT  
TCCACCTCTGAAATGAGAATTACTTGACAGTTGGGATACTTAAATCAGAAAAAAGAACTTATTTGCAGC  
ATTTTATCAACAAATTTCAATAATTTGGACAAATTTGAGGCAATTTATTTAAAAACAATTTTATTTGGCCT  
TTTGTCAACAGATTAAGCATGATTTTATAGGCAATTAATAAATGCACACGCCCAAGGAAATAAAT  
CCTATCTAATCTACTCTCCACTACACAGAGGTAACTACTATTAGTATTTGGCATATPATTCCTCAGGT  
GTTTGTCTATGCACTTATAAATGATTTGAACAAATAAACTAGGAACCTGTATACATGTGTTTCATAAC  
CTGCCCTCTTGTGCTGGCCCTTTATTTGAGATAAGTTTCTGTCAAGAAAGCAGAAACCTCTCATTTCT  
AACAGCTGTGTTATATTCATAGTATGCATTACTCAACAACTGTTGTGCTATTGGATACTTAGGTGGT  
TCTTCACTGACAACTACTGAATAAACATCTCACCAGGATTC

FIGURE 41

GATTTAATCCTATGACAACTAAGTTGGTTCTGTCTTACCTGTTTGGTGAGGTTGTGTAAGAGTTGGT  
GTTTGTCTCAGGAAGAGATTTAAGCATGCTTGCTTACCCAGACTCAGAGAAGTCTCCCTGTTCTGTCTAG  
CTATGTTCTGTGTTGTGTGCATTTCGTTTTCAGAGCAAACCGCCAGAGTAGAAGATGATTGGGGC  
ACGCTGCAGACGATCCTGGGGGGTGTGAACAAACACTCCACCAGCATTGGAAAGATCTGGCTCACCGTCC  
TCTTCATTTTTCGCATTTATGATCCTCGTTGTGGCTGCAAGGAGGTTGTGGGGAGATGAGCAGGCCGACTT  
TGTCTGCAACACCCCTGCAGCCAGGCTGCAAGAACGTGTGCTACGATCACTACTTCCCCATCTCCACATC  
CGGCTATGGGCCCTGCAGCTGATCTTCGTGTCCAGCCAGCGCTCCTAGTGGCCATGCACGTGGCCTACC  
GGAGACATGAGAGAAGAGGAAGTTTCATCAAGGGGGAGATAAAGAGTGAATTTAAGGACATCGAGGAGAT  
CAAAACCCAGAACCTCCGCATCGAAGGCTCCCTGTGGTGGACCTACACAAGCAGCATCTTCTCCGGGTC  
ATCTTCGAAGCCGCTTCATGTACGCTTCTCATGTACGACGGCTTCTCCATGCAGCGGCTGGTGA  
AGTGAACGCCCTGGCCTTGTCCCAACACTGTGGACGTCTTGTGTCCCGGCCACGGAGAAGACTGTCTT  
CACAGTGTTCATGATTGCAGTGTCTGGAATTTGCATCCTGTGTAATGTCACTGAATTTGTGTATTGTCTA  
ATTAGATAATTTCTGGGAAGTCMAAAAAGCCAGTTTAAACGCATTGCCAGTTGTTAGATTAGAAATAG  
ACAGCATGAGAGGGATGAGGCAACCGTGTCTCAGCTGTCAAGGCTCAGTCGCCAGCATTTCCCAACACAA  
AGATTCTGACCTTAAATGAACCATTTGAAACCCCTGTAGGCCTCAGGTGAAACTCCAGATGCCACAATG  
AGCTCTGCTCCCTTAAAGCCTCAAAACAAAGCCCTAAATCTATGCTGTCTTAATTTCTTTCACTTAAG  
TTAGTTCCACTGAGACCCAGGCTGTTAGGGGTTATTGGTGTAAAGTACTTTCATATTTTAAACAGAGGA  
TATCGGCATTTGTTTCTTTCTCTGAGGACAGAGAAAAAGCCAGGTTCCACAGAGGACACAGAGAAGGT  
TTGGGTGTCTCTGGGGTTCTTTTGCCAACTTTCCCCACGTTAAAGGTGAACATTGGTCTTTCTATTT  
GCTTTGGAAGTTTAAATCTCTAACAGTGGGCAAGTTACAGTGCCTTAAACTCTGTTACACTTTTGGGA  
AGTGAAAACCTTTGTAGTATGATAGGTTATTTTGATGTAAAGATGTTCTGGATACCATTAATATGTTCCCC  
TGTTTCAGAGGCTCAGATTGTAAATATGTAAATGGTATGTCATTGCTACTATGATTAAATTTGAAATATG  
GTCTTTTGTTATGAATACTTTGCAGCACAGCTGAGAGAGGCTGTCTGTGTATTTCATTGTGGTCATAGC  
ACCTAACACATTGTAGCCTCAATCGAGTGAGACAGACTAGAAGTTCCTAGTTGGCTTATGATAGCAAT  
GGCCTCATGTCAAATATTAGATGTAATTTTGTGTAAAGAAATACAGACTGGATGTACCACCACTACTACC  
TGTAATGACAGGCCTGTCCAACACATCTCCCTTTTCCATGCTGTGGTAGCCAGCATCGGAAGAAGCGCTG  
ATTTAAAGAGGTGAGCTTGGGAATTTTATTGACACAGTACCATTAAATGGGGAGACAAAAATGGGGGCCA  
GGGGAGGGAGAGTTTCTGTCTGTTAAAAACGAGTTTGGAAAGACTGGACTCTAAATTTCTGTTGATTAAAG  
ATGACCTTTGTCTACCTTCAAAGTTTGTGTTGGCTTACCCCTTCAGCCTCCAATTTTAAAGTGAAAT  
ATACTAATAACATGTGAAAGAATAGAAGCTAAGGTTTAGATAAATATTGAGCAGATCTATAGGAAGAT  
TGAACCTGAATATTGCCATTATGCTTGACATGGTTTCCAAAAAATGGTACTCCACATACTTCAGTGAGGG  
TAAGTATTTCTGTGTCAAGAATAGCATTTGTAAGCATTTTGTAAATAAAGAATAGCTTTAATGA  
TATGCTGTGAACATAAATAATTTGTAAATGTATCAATACATTTAAACATTAAATATAATCTCTATAA  
T

FIGURE 42

CGGGCAGCACACCCCGGCACCTCCTCTGCGGCAGCTGCGCCTCGCAAGCGCAGTGCAGCAGCGCACGCCG  
GAGTGGCTGTAGCTGCCTCGGCGCGGGCTGCCGCCCTCGCGGGCTGTGGGCTGCGGGCTGCGCCCCGCT  
GCTGGCCAGCTCTGCACGGCTGCGGGCTCTGCGCGCGCCCGTCTCTGCAACGCTGCGGCGGGCGGCATG  
GCATAACGCGGCCAATGCTGCGCGGAGATCGCCTCCGAGGATGAGGGAGTGGTGGGTCCAGGTGGGGCTG  
CTGGCCGTGCCCCTGCTTGTGCGTACCTGCACATCCACCCCTCAGCTCTCCCTGCCCCTCACTCAT  
GCAAGTCTTCAGGCAAGTTTTCACTTACAAGGAGTGCCTATCTTCTACCAAGACTCTGTGGGTGTGGT  
TGGAACTCCAGAGATAGTTGTGCTTTTACACGGTTTTCCACATCCAGCTACGACTGGTACAGATTGG  
AAGCGTCTGACCTTGAGGTTTCATCGGGTGATTGCCCTTGATTTCTTAGGCTTGGCTTCAGTGACAAAC  
CGAGACCACATCACTATTCCATATTGAGCAGGCCAGCATCGTGGAAAGCGCTTTGCGGCATCTGGGGCT  
CCAGAACCGCAGAAATCAACCTTCTTTCTCATGACTATGGAGATATTGTGTCTCAGGAGCTTCTCTACAGG  
TACAAGCAGAAATCGATCTGGTGGGCATACCATAAAGAGTCTCTGTCTGTCAATGGAGGTATCTTTCCTG  
AGACTCACCGTCCACTCCTTCTCCAAAGCTACTCAAGATGGAGGTGTGCTGTACCCATCTCACACG  
ACTGATGAATCTCTTGTATTCTCTCGAGGTCTCACCCAGTCTTTGGGCGGTATATCTGGCCCTCTGAG  
AGTAGCTGTGGGACATGTGGCAGGGATCCGCAACAAATGACGGGAATTAAGTCAATGACAGTCTCTTAC  
AGTACATCAATCAGAGGAAGAAGTTCAGAAAGCGCTGGGTGGGAGCTCTTGCTCTGTAACATATCCCAT  
TCATTTTATCTATGGGCCATTGGATCCTGTAAATCCCTATCCAGAGTTTTTGGAGCTGTACAGGAAACG  
CTGCCGCGGTCCACAGTGTGATTTCTGGATGACCACATTAGCCACTATCCACAGCTAGAGGATCCCATGG  
GCTTCTTGAATGCTATATGGGCTTCATCAACTCCTTCTGAGCTGGAAAGAGTAGCTTCCCTGTATTACC  
TCCCTTACTCCCTTATGTGTTGTGTATTCCACTTAGGAAGAAATGCCAAAGAGGTCTTGGCCATCAA  
CATATTCTCTCACAAGTCCACTTTACTCAATTGGTGAACAGTGTATAGGAAGAAGCCAGCAGGAGCT  
CTGACTAAGGTTGACATAATAGTCCACCTCCCATTAATTTGATATCTGATCAAATGTATAGACTTGGCTT  
TGTTTTTGTGCTATTAGGAAATCTGATGAGCATTACTATTCACTGATGCGAAGAGAGCTTCTTTTGC  
TAAAGACTTTTTTTTAAACACTTTGGACTTCTCTGAAATATTTAGAAGTGCTAATTTCTGGCCACCCCC  
AACAGGAATTTCTATAGTAAGGAGGAGGAGAAGGGGGCTCCTTCCCTCTCCTCGAATGACGTTATGGGCA  
CATGCCTTTTTAAAGTTCTTTAAGCAACACAGAGCTGAGTCTCTTTGTATACCTTTGGATTTAGTGT  
TCATCAGCTGTTTTAGTTATTAACATTTTGTAAATAGATATTGGTTTAAATGATACAGTATTTAGG  
TATGATTTAAGACTATGATTTACCTATACATTATATATTTTATAAAGATACTAAACCAGCATACCTT  
ACTCTGCCAGAGTAGTGAAGCTAATTAACACGTTTGGTTTCTGAATAAATTGAACATAATCCAACTAT  
TTCCATAAATCAGAGCATTAAGGACCAATAGCATCTGTGCCAGAGATGTAATGTTATTAGCTGGGAAG  
ACCAATTCTAACAGCAAATAACAGTCTGAGACTCCTCATACCTCAGTGGTTAGAAGCAATGCTCTCTTGA  
GCTACAGTAGAGGGGAAGGGATTGTTGTGTAGTCAAGTCACCATGCTGAATGTACACTGATTCTCTTATG  
ATGACTGCTTAATCTCCCACTGCCGTGCCAGAGAGGCTTTCCAAATGTAGCTCAGTAATCTCTGTACTT  
TACAGACAGGAAAGTTCCAGAACTTTAAGAACAACTCTGAAGACCTATGAGCAAATGGTGTGATA  
CTTTTAAATTAGCAACTTCAAGTATAACAACCTTGAACCTGGAATAAGTGTTTATTTCTATTATAA  
AATGAATTGTGACAAAAAAAACCG

FIGURE 43

CTCTGAGTGTCCAGTGGTCASTTGCCCCAGGATGAGGGACCACAGCCAGAGCAECCTTGGTCTTGACCTAT  
TTGGCTGTTCCTTCTGCTGCCCTTGAGGGAGGCTTCACGGCTACAGGACAGAGGCAGCTGAGGCCAGAGC  
ACTTTCAGAAGTTGGCTACGCAGCTCCCCCTCCCCACCCCTATCCCGAAGCCTCCCATGGATCACCC  
TGACTCCTCTCAGCATGGCCCTCCCTTTGAGGGACAGAGTCAAGTGCAGCCCCCTCCCTCTCAGGAGGCC  
ACCCCTCTCCAACAGGAAAAGCTGTACCTGCCCACTCCCTGCTGAAAAGGAAGTGGGTCCCCCTCTCC  
CTCAGGAAGCTTCCCCCTCCAAAAGAGCTGCCCTCTCTCCAGCACCCCAATGAACAGAAGGAAGGAAC  
GCCAGCTCCATTGAGGGACCAGAGCCATCCAGAACCTGAGTCC1GGAATGCAGCCCAGCACTGCCAACAG  
GACCGGTCCCAAGGGGGCTGGGGCCACCGGCTGGATGGCTTCCCCCTGGGCGGCCTTCTCCAGACAAATC  
TGAAACCAATCTGCCCTTCTAACCCTCAGCATGTGGTATATGGTCCCTGGAACCTACCACAGTCCAGCTA  
CTCCACCTCACTCGCCAGGGTGAGACCTCAATTTCTGGAGATTGGATATTCCGCTGCTGCCACTGC  
CGCACCCACACAAACCGCTAGAGTGTGCCAACTTGTGTGGGAGGAAGCAATGAGCCGATTCTGTGAGG  
CCGAGTTCTCGGTCAAGACCCGACCCCACTGGTGTGTCACGCGGCGAGGGGAGGCTCGGTTCTCTGTCTT  
CCAGGAGGAAGCTCCCCAGCCACACTACCAGCTCCGGGCTGCCAGCCATCAGCCTGATATTTCTCG  
GGTCTTGAGCTCCCTTTCCCTCCTGGGGTGCCACATTGGACAATATCAAGAACATCTGCCACCTGAGGC  
CCTTCCGCTCTGTGCCACGCAACCTGCCAGCTACTGACCCCTTACAAAGGGAGCTGCTGGCACTGATCCA  
GCTGGAGAGGGAGTTCCAGCGCTGCTGCCGCCAGGGGAACAATCAACCTGTACATGGAAGGCCTGGGAG  
GATACCCTTGACAAATACTGTGACCGGGAGTATGCTGTGAAGACCCACCACCACTTGTGTGCGCGCCACC  
CTCCAGCCCTACTCGGGATGAGTGCTTTGCCCGTCGGGCTCCTTACCCCACTATGACCGGGACATCTT  
GACCATTGACATCAGTCGAGTCACCCCAACCTCATGGGCCACCTCTGTGGAACCAAGAGTTCTCACC  
AAGCATAAACATATTCTGGGCTGATCCACAACATGACTGCCCGCTGCTGTGACCTGCCATTTCCAGAAC  
AGGCCTGCTGTGCAGAGGAGGAGAAATTAACCTTCATCAATGATCTGTGTGGTCCCGAGCGTAACATCTG  
GCGAGACCTGCCCTCTGCTGTACCTGAGTCTGGGGATGAACAGGTCAACTGCTTCAACATCAATTAT  
CTGAGGAGCGTGGCTCTAGTGTCTGGAGACACTGAGAACGCCAAGGGCCAGGGGGAGCAGGGCTCAACTG  
GAGGAACAAATATCAGCTCCACCTCTGAGCCCAAGGAAGAAATGAGTCACCCCAGAGCCCTAGAGGGTCA  
ATG

## FIGURE 44

ACTCACTATAGGGCTCGAGCGGCCGCCCGGGCAGGTGGCCACCCACCATCATCTAAAGAAGATAAACTTGG  
CAATGACATGCAAGTTCTTCAAGGCAAAATAATTGCAGAAAATCTTCAAAGGACCCTATCTGCAGATGTT  
CTGAATACCTCTGAGAATAGAGATTGATTATTCACCAGGATACCTAATTCAGAACTCCAGAAATCAGGA  
GACGGAGACATTTTGTGAGTTTTCGAACATTGGACCAATACAAAGTATTCTTGCTGTGCTCTGGTTT  
TGCTGTCTCTGGGACAGAAATTGCTGGGAAGCCTCTCTTCGACTGTGAGATCCCCGAGGTTACAGGACGG  
ATACAGCAGGAACGAAAAACATCCGACCCAAACATTATTCTTGCTTACCAGATGATCAAGATGTGGAGCT  
GGGGTCCCTGCAAGTCATGAACAAACAGAAAGATTATGAAACATGGGGGGGCCCTTCATCAATGCCT  
TTGTGACTACCCCATGTGCTGCCCGTCACGGTCTCCATGCTCACCGGAAGTATGTGCACAATCACAA  
GTCTACACCAACAACGAGAACCTGCTCTTCCCTCCGTCGAGGCCATGATGAGCCTCGGACTTTTGCTGT  
ATATCTTAACACACTGGCTACAGAACAGCCTTTTTTGGAAAATACCTCAATGAATATAATGGCAGCTACA  
TCCCCCTGGGTGGGAGAGATGGCTGGATTAACTCAGAATTTCTCGCTCTATAATTACACTGTTTGTGCG  
AATGCCATCAAAAGCATGGATTGATTATGCAAGGACTACTTCACAGACTTAATCACTAACGAGAG  
CATTAATTACTTCAAAATGTCTAAGAGAAATGATATCCCATAGGCCCGTTATGATGGTGATCAGCCACGGTG  
CGCCCCACGGCCCCGAGGACTCAGCCCCACAGTTTTCTAACTGTACCCCAATGCTTCCCAACACATAACT  
CCTAGTTATACTATGCACCAAAATATGGATAAACACTGGATTATGCAGTACACAGGACCAATGCTGCCCAT  
CCACATGGAATTTACAAACATCTACAGCGCAAAAGGCTCCAGACTTTGATGTGCTGATGATTCTGTGG  
AGAGGCTGTATAACATGCTCGTGGAGACGGGGGAGCTGGAGAACTTACATCAATTACACCGCCGAGCT  
GGTTACCATATTGGGCACTTTGGACTGGTCAAGGGGAATCCATGCCATATGACTTTGATATTCTGCTGCC  
TTTTTTTATTCGTGGTCCAAAGTGTAGAACCAGGATCAATAGTCCCAACAGATCGTTCTCAACATTGACTTGG  
CCCCACGATCCTGGATATTGCTGGGCTCGACACACCTCCTGATGTGGACGGCAAGTCTGCTCCTCAAACT  
CTGGACCCAGAAAAGCCAGGTAAACAGGTTTCGAACAAACAAGAAGGCCAAAATTTGGCGTGATACATTCCCT  
AGTGGAAAGAGGCAAAATTTCTACGTAAGAAGGAAGAAATCCAGCAAGAAATCCAAACAGTCAAAATCACTTGC  
CCAAATATGAACGGGTCAAAGAACTATGCCAGCAGGCCAGGTACCAGACAGCTGTGAACAACCGGGGCGAG  
AAGTGGCAATGCAATTGAGGATACATCTGGCAAGCTTCGAATTCACAAGTGTAAAGGACCCAGTGACCTGCT  
CACAGTCCGGCAGAGCAGCGGGAACCTCTACGCTCGCGGCTTCCATGACAAAGACAAAGAGTGCAGTTGTA  
GGGAGTCTGGTTACCGTGCCAGCAGAAGCCAAAGAAAGAGTCAACGGCAATTCTTGAGAAACCAAGGGGACT  
CCAAAGTACAAGCCAGATTTGTCCATCTCGGCAGACACGTTCTTGTCCGTCGMAATTTGAAGGTGAAAT  
ATATGACATAAATCTGGAAGAGAGAAAGAAATTTGAAGTGTGCAACCAAGAAACATTGCTAAGCGTCTAG  
ATGAAGGCCACAAGGGGCCAAGAGATCTCCAGGCTTCCAGTGGTGGCAACAGGGGCAAGGATGCTGGCAGAT  
AGCAGCAACGCGCTGGGCCCCCTACCCTGTCCGAGTGACACACAAGTGTATTTATCTTCCCAATGACTC  
TATCCATTGTGAGAGAGAACTGTACCAATCGGCCAGAGCGTGAAGGACCATAGGCATACATTGACAAAG  
AGATTGAAGCTCTGCAAGATAAAATTAAGAAATTAAGAGAAAGTGAAGGACATCTGAAGAGAAAGGACCT  
GAGGAATGTAGCTGCAGTAACAAAGCTATTACAATAAAGAGAAAGGTGTAAAAAGCAAGAGAAATTAAG  
GAGCCATCTTACCCTATTCAGGAGGCTGCTCAGGAAGTATAGTACAACTGCAACTTTTCAAGGAGAAACA  
ACCGTAGGAGGAAGAAGGAGAGGAAGGAGAACAGACCGCAGAGGAAGGGGAAGAGTGCAGCCTGCTTGGC  
CTCACTTGTCTCAGCATGACAAACAACCACTGGCAGACAGCCCCGTTCTGGAACCTGGGATCTTTCTGTGC  
TTGCLAGAGTTCTAACAATAACACCTACTGGTGTATTGCGTACAGTTAATGAGACGCATAATTTCTTTCT  
GTGAGTTTGCTACTGGCTTTTGGAGTATTTGATATGATACAGATCCTTATCAGCTCAAAATACAGTG  
CACACGGTAGAACGAGGCATTTGAATCAGCTACACGTACAATAATGGAGCTCAGAACTGTCAAGGATA  
TAAGCAGTGCAACCAAGACCTAAGAACTCTTGATGTTGGAAATAAAGATGGAGGAAGCTATGACCTACACA  
GAGGACAGTTATGGATGGATGGGAAGGTAACTCAGCCCCGTCTCACTGCAGACATCAACTGGCAAGGCT  
AGAGGAGCTACAGTGTGAATGAAACATCTATGAGTACAGACAAACTACAGACTTAGTCTGGTGGACT  
GGACTAATTACTTGAAGGATTTAGATAGAGTATTTGCACTGCTGAAAGTCACTATGAGCAAAATAAAACA  
AATAAGACTCAAACTGCTCAAAGTGACGGGTTCTTGGTTGTCTCTGCTGAGCAGGCTGTGTCTATGGAGAT  
GGCCTCTGCTGACTCAGATGAAGACCAAGGCATAAGGTTGGGAAAACACCTCATTTGACCTTGCCAGCTG  
ACCTTCAAACCTTGCAATTTGAACCGACCAACATTAAGTCCAGAGATAACTTGAATGGAATAACGACATT  
CCAGAAAGTTAATCATTTGAATTTCTGAACCTGGAGAAAACCGAAAATGGACGGGGCATGAAAGAGCTAA  
TCATCTGGAAACCGATTTCACTGGCGATGGCATGACAGAGCTAGAGCTCGGGCCAGCCCCAGGCTGCAAGC  
CCATTCGCAAGGACCCGAAAGAACTTCCCCAGTATGGTGGTCTGGAAGGACATTTTGAAGATCAACTA  
TATCTTCTGTGCTATTCGATGGAATTTCACTCATCAGATGTTCAACATGGCCACCGCAGAACCCGAG  
TAATTCAGCATAGCGGGGAAGATGTTGACCAAGGTGGAGAAAGAAATCACGAAAAGGAGAGTACAGCACC  
TAGAAGGCAGCGCTCCTCTTCACTCTCTCTGATTAGATGAACTGTTACCTTACCCTAAACACAGTATT  
TCTTTTAACTTTTATTTGTAACATAAAGGTAATCACAGCCACCAACATTCCAGCTACCCCTGGGT  
ACCTTTGTGCAGTAGAAGCTAGTGAGCATGTGAGCAAGCGGTGTGCACACGGGACTCATCGTTATAATTT  
ACTATCTGCCAAGAGTAGAAGAAAGGCTGGGGAATTTGGGTTGGCTTGGTTTGTATTTTGTCTGTTT  
GTTGTTTGTACTAAACAGTATTATCTTTGAATATCGTAGGGACATAAGTATATACATGTTATCCAAT

FIGURE 45A

CAAGATGGCTAGAAATGGTGGCTTCTGAGTGTCTMAAAGCTTGACACCCCTGGTAAATCTTCAACACACTT  
CCACTGCCCTGCGTAATGAAGTTTGGATTCAATTTTAACCACTGGAATTTTCAATGCCGTCAATTTTCAGTT  
AGATGATTTTGCACCTTTGAGATTAAATGCCATGTCTATTGATTAGTCTTATTTTTTATTTTTACAGGC  
TTATCAGTCTCACTGTGGCTGTCTATTGTGACAAAGTCAATAAACCCTCAAGGACGACACACAGTATGGA  
TCACATATTGTTTGACATTAAAGCTTTGCCAGAAATGTTGCATGTGTTTTACCTCGACTTGCTAAATCG  
ATTAGCAGAAAGGCATGGCTAATAATGTTGGTGGTGAATAAATAAATAAGTAAACAAAWRAARAWWGC  
CTGCTCTCTCTGTGCTAGCCTCAAGCGTTTCATCATACATCATACCTTTAAGATTGCTATATTTGGGTT  
ATTTTCTTGACAGGAGAAAAAGATCTAAGATCTTTTATTTTCATCTTTTTTGGTTTTCTTGGCATGACTA  
AGAAGCTTAAATGTGATAAAATATGACTAGTTTGAATTTACACCAAGAACTTCTCAATAAAGAAAAATC  
ATGAATGCTCCACAAATTTCAACATACCACAAGAGAAAGTTAATTTCTTAACATTGTGTCTATGATTATTG  
TAAGACCTTCACCAAGTTCTGATACTTTTAAAGACATAGTTCAAAATTGCTTTTGAAATCTGTATTCTT  
GAAAATATCCTTGTGTGTATTAGGTTTTTAAATACCAGCTAAAGGATTACCTCAGTGAGTCATCAGTACC  
CTCCTATTCAAGCTCCCCAAGATGATGTGTTTTTGTTCACCTAAGAGAGGTTTTCTTCTTATTTTAGATA  
MTCAAGTGCTTAGATAAATATGTTTTCTTTAAGTGTATGTTAAACTCTTTTAAAGAAAATTTAATAT  
GTTATAGCTGAATCTTTTGGTAACTTAAATCTTTATCATAGACTCTGTACATATGTTCAAATTAGCTGC  
TTGCCTGATGTGTGTATCATCGGTGGGATGACAGAACAAACATATTTATGATCATGAATAATGTGCTTTGT  
AAAAAGATTTCAGTTATTAGGAAGCATACTCTGTTTTTAAATCATGTATAATATTCCATGATACTTTTAT  
AGAACAAATCTGGCTTCAGGAAGTCTAGAAGCAATATTCTTCAAATAAAGGTGTTTAAACTTTAAAAA  
AAAAAAAAAAAAAAAAAAAAA

## FIGURE 45B

CAAGAAATTCGGCACGAGGGCGTGTCCAGAAAGTGTGGATACGTGTCAGTAGTTAATTCAGCTGGCAGGT  
TCCCTGAGTGCAGCTGGCTCGATAGTCGTAAATGAAGAGTGTGTCCGAAAAGACTTTGAATCCAGTATGAA  
TGTAGTACAGGAAATTAATTTAAGTCTAGGATCAGAGGGACTGAAGACTGGGCTCCTCCTAGATTTCTAA  
TCATATTTAATATTCTCCACCCTCAAGAGGGACCTTGTGGTGGCAGCCAGATTTTCTGTGCCGGC  
TGTGGAACCTCCAGTAGAGCCTAAGTTTGTGAAGCGGCTCCGGTACTGCCAATACCTAGGGAAGTATTTCTG  
TGACTGCTGCCACTCATATGCAGAGTCGTGCATCCCTGCCGAATCCTGATGATGTGGGACTTCAAGAAGT  
ACTACGTGAGCAATTTCTCCAAACAGCTGCTCGACAGCATATGGCACCAGCCCATTTTCAATTTGCTGAGC  
ATCGGCCAAAGCCTGTATGCGAAAGCCAAAGGAGCTGGACAGAGTGAAGGAAATTCAGGAGCAGCTCTTCCA  
TATCAAAGAAGCTGTTGAAGACCTGTAGGTTTGTATCAGTGCATTAAAGGAGTTCGAGCAGGTGCCGGGA  
CACTTGACTGATGACTCCACCTGTCTCCCTTAGGACCTGGTCAGGATCAAGAAAGGGCTGCTGGCACCTT  
TACTCAAGGACATTCTGAAGGCTTCCCTTGACATGTGGCTGGCTGTGAGCTGTGTCAAGGAAAGGGCTTT  
ATTTGTGAATTTGCCAGAATACGACTGTCATCTTCCCATTTCAAGACAGCAACATGTAGAGATGTTTCAGC  
GTGCAAGGGCTTGTCTTCAAAACAGTGTCTCCAGTCCCTCCGAGTGCCCCCGGTGTCCGAGGATCACAGCGA  
GGAGAAAACCTTCTGGAAGTGTGGCCTCTGCAGCAACATGATGCCCTGAGTACTGTGAAAAGAGACTGTTT  
AACATGCCCTTATGATAACCCGATTTGTGTCTATTATTGGTGACATTGTTTTAGATATTGGGTATTGTATA  
TTAAGGAAAAGATGCTATATTCTCTTATTGTCATATACTTAATGTTTCAAAGAATGCAGATTCTGTG  
TTTAAGCACAGGGCTGATAGTTGTGGTTTGTTTACAAATGTTCTGTTTGGCTGCTATTGGTTTTTAA  
GAGGTTTTTATACTTTTGTATTGATAGTTATGTTTCACTGATGCTGAGCCAGTTTGTATGTGTGCA  
TATATGTGAACGTAACTGACAAGATGAATTACTAGTTTCTCTTCTCTAAAGCTTGTTTGATGAACTG  
GTTGGTCCCTTTCAAGTGMAMAAAWATATGACCCCAAAAAAAAAAAAAAAAAAAGCAATGCGAAGGTG  
CTAATCCTGACGCTCGTGGTGGCCGCTTGGCGCTTCTGCTCTGGAGCAGCAATGGGCGACAAAGGAAGAA  
CGAGGCCCTCGCCCCACCGTTGCTGGACGCCGAACCCGCG

## FIGURE 46

GGAAATTTATAGATCTTGATATTGAATCCATCAGTGATTCAAGAGATACACCTATTTGCCTAAAAACAACCTA  
ACATGTATTGGTTATGGAATCATGTGTTGGATAGGTTCTTAAGACCTGTTTCTCAAATCTTGACACAGTT  
TTCAAGGGTGGCTTATTGACTTGCACGGTTGGGCAGATAATCCAGATTTACCTAAGATTGGGTAAAAAGT  
CATCTGTGACTTTGCTGGCAGGGCATTGCTAAGTGGAGTACAGGATCTAAAAGGGTTTTCTTAGAAAGGG  
CAATATTGTCCAATGAAGTAAGCAGAAGGACTCTGGGTAGAAAGCATCTGCACAAAACTGGTGAGACCTA  
CTCTCCCTGCTCTGCAGCTGGATGGCTGATGGCAGGCTGAGCAGTGGGGAAGCAGGTTTTAACAAACAGGG  
AGTCCTTCCAGGTCACTGTATATTGAGAAAGAACTAAAACATTTGTCTGTACATTCCGAGGTCAGCCTT  
CTTCTTAACGTTTTATAATATGCAATGCCAGCTTCTGGAAGCAAGTATCATCATGTACCAATGCTTTA  
TACACCATCATATCATGAATTTTATGCAATGGTCAGAACTTGTGTAATATGTCTCTTAGATGATTTTGG  
GGAGATGTGATTTATTTTTCATATTTTCAAATGCATTTCAATTAAGTTATCTATTGAGACAAAC  
GAAAAAAAAAAAAAAAAAAAAA

## FIGURE 47

[illegible]

## FIGURE 48

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